

(No Model.)

E. BALZER. SWITCH.

2 Sheets—Sheet 1.

No. 568,727.

Patented Oct. 6, 1896.

Fig. 1.

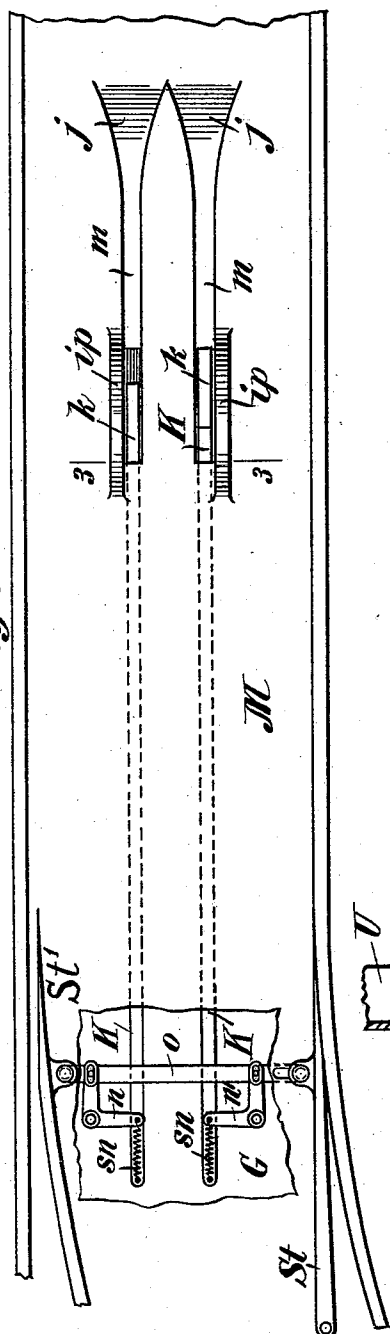


Fig. 2.

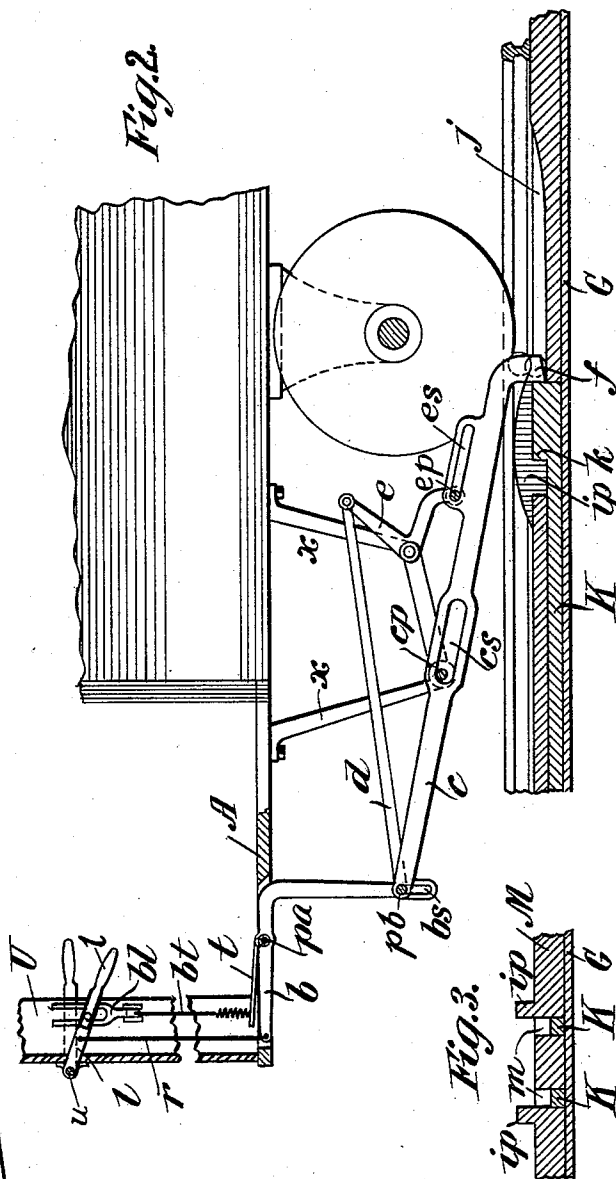


Fig. 3.



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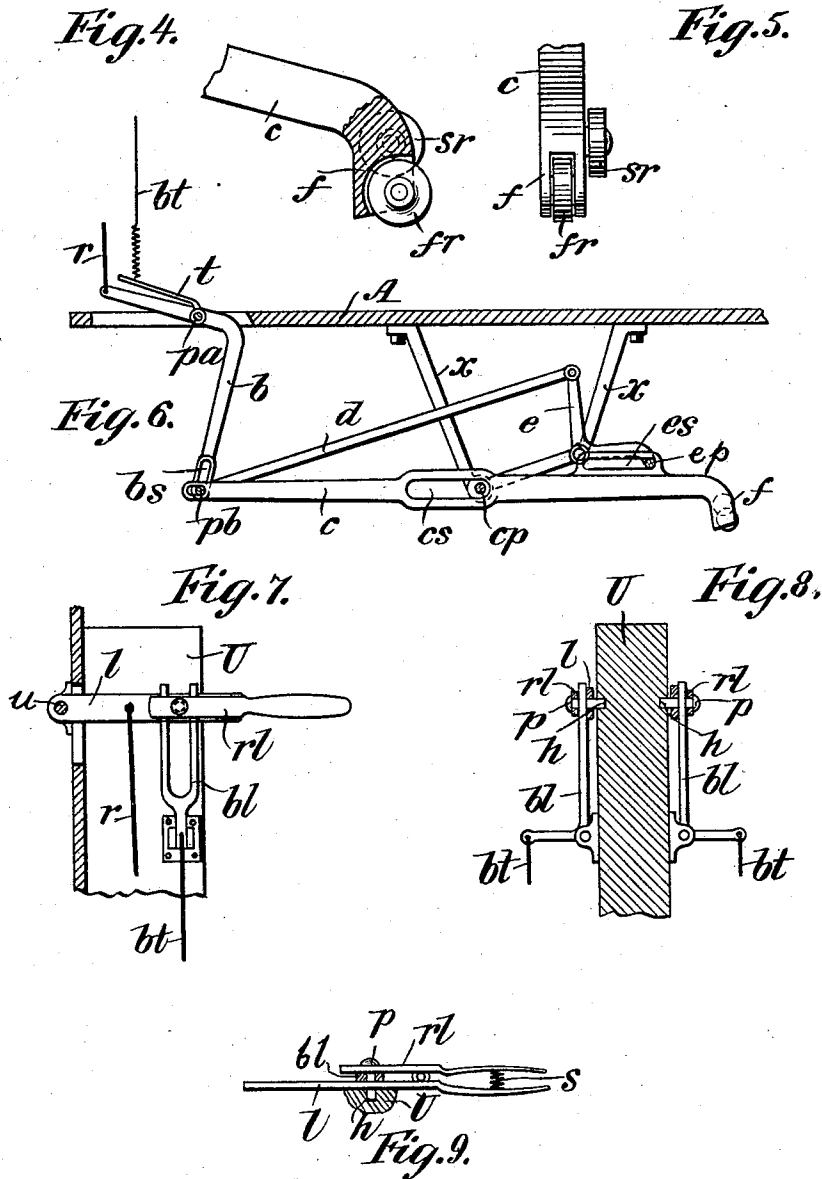
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2 Sheets—Sheet 2.

E. BALZER.
SWITCH.

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UNITED STATES PATENT OFFICE.

EMIL BALZER, OF CHICAGO, ILLINOIS.

SWITCH.

SPECIFICATION forming part of Letters Patent No. 568,727, dated October 6, 1896.

Application filed March 30, 1896. Serial No. 585,369. (No model.)

To all whom it may concern:

Be it known that I, EMIL BALZER, a citizen of the United States, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Switches, of which the following is a specification.

My invention relates to switches; and it consists of a device for setting a switch and for an attachment on street-cars operating the switch from the platform of the car.

My invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a plan of the road-bed, showing the arrangement of a switch and of the contrivance for setting the same, a part of the road-bed being removed to show the arrangements of levers moving the switch. Fig. 2 is a section of a portion of a street-car and of the road-bed, showing my improved car attachment for operating the switch in moment of action. Fig. 3 is a cross-section of the road-bed on the line 3 3 indicated in Fig. 1. Fig. 4 is an enlarged side view, partly a section of the head of the switching-lever. Fig. 5 is an end view thereof. Fig. 6 is a similar view as Fig. 2, only showing the car attachment in position of rest. Fig. 7 is a side view of the lever for operating the switching attachment from the platform of the car. Fig. 8 is a front view, partly a section of the post, showing the lever and connection for operating the car attachment by a treadle. Fig. 9 is a top view of the lifting-lever.

Similar letters of reference indicate corresponding parts in all views.

My improved street-car-switching device consists of two principal parts—of the car attachment and of the contrivance set in the road-bed. The car attachment is provided in duplicate on each end of the car for throwing the switch in either direction and is constructed and operated as follows:

Bell-crank lever *b* is fulcrumed on pivot *pa* in platform *A* of the car, and its downward-pointing end, terminating in an elongated eye *bs*, is connected by pin *pb* to the switch-operating lever *c* and to the connecting-rod *d*. Rod *c* is balanced on pin *cp*, so that when in position of rest, as shown in Fig. 6, its tail end, between *cp* and *pb*, will outweigh the other part, and vice versa, when

pushed in position shown in Fig. 2, its hooked end *f* then engaging the head of the switch-throwing bar in the slot of the road-bed. This hooked end *f* is provided with a roller *fr*, projecting below its gripping-point and carrying it over the ground. Roller *sr*, revolving on a pivot, is set in the side of the rod in such a position that it will travel over the block *ip* on the road-bed as the car moves along and lift up the hooked end of rod *c* from the slot *m* when the switch has been thrown. Pin *cp*, supporting lever *c* in slot *cs*, is set in bracket *x*, screwed to the bottom of the car. To this bracket *x* is also pivoted the bell-crank lever *e*, whose upper arm is connected by the rod *d* to the bell-crank lever *b*. The other arm of lever *e* is connected directly to lever *c*, cross-pin *ep* engaging in the slot *es* of the lever.

The levers *b* and *e* cooperate in their action on the lever *c*, shifting on pin *cp*. When the same is shifted from position of rest into the operating position, lever *b* moves it horizontally and at the same time lever *e*, actuated by rod *d*, will press its head end downward. When lever *c* is lifted from the slot by cooperation of roller *sr* and block *ip*, then lever *e* will be pushed upward and, transmitting the motion through rod *d*, will shift lever *c* on pin *cp* back in its normal position of rest.

Crank-lever *b* is operated from the platform of the car in the following manner: To the standard *U*, set on the platform adjoining the dashboard, is screwed bracket *u*, and to it is pivoted the hand-lever *l*. Rod *r* connects the lever *l* to the bell-crank lever *b*. To the outside of this hand-lever *l* is pivoted the releasing-lever *rl*, so that the two handles of the levers *l* and *rl* may be operated with one hand. Pin *p*, screwed in the other end of this lever *rl* and passing through the hand-lever *l* in the hole *h* in the post *U*, holds it in the position shown in Fig. 7. Spring *s*, placed between the grip ends of the levers *l* and *rl*, keeps them apart and presses pin *p* into the recess *h* of the post *U*.

It is often necessary for the driver of a car to use both his hands in handling the other apparatus—motor, brake—and to enable him to set the switching attachment in such case by foot I have appended to the described apparatus the following device:

To the post U is pivoted, below the lever *l* and at right angles thereto, the bell-crank lever *bl*, whose longer upper arm is forked, the tines thereof passing on both sides of the pin *p* between the hand-lever *l* and the releasing-lever *rl*. The shorter lower arm of this lever *bl* is connected to treadle *t* by rod *bt*. Thus when the driver of the car steps on treadle *t* the forked arm of lever *bl* will act against pin *p* and move it out of the hole *h* in the post U, and thus release lever *l* from its locked position. Then treadle *t*, pressed farther downward, will act on lever *b* and shift the switching-lever *c* in acting position, as described above.

The other part of my invention consists of the device for setting the switch arranged in the road-bed. Between the rails, underneath the switch, is laid the base-plate G, wherein the connecting-bar *o* and the bell-crank levers *n* and *n'* are set. Switch ends *S* and *S'* are connected to bar *o*. Crank-levers *n* and *n'* have each one arm connected to the bar *o* and the other by means of the springs *sn* to push rods K, having shoulders *k*, sliding in slots *m*, provided in the cover-plate M. Against these shoulders K engages the hooked end *f* of the switching-lever. On the outer sides of these slots *m*, close to the end of the slit, are set-blocks *ip*, on which the side roller *sr* of the rod *c* travels, lifting the hooked end *f* of the switching-lever out of contact with the head *k*, as described above, after the switch has been thrown. According to what direction the car is to go the switch is set by moving one of the rods K. When the switch is set so that a car will go straight ahead, as shown in Fig. 1, and is to be switched to the side-track, the driver will set the left-hand switching-lever in action, and by moving the corresponding rod K shift the switch-tongue *S*, and the car will take the side-track.

I claim as my invention and desire to secure by Letters Patent—

1. A switch attachment for street-cars, comprising two bell-crank levers, one pivoted in the platform of the car and the other on a bracket underneath the car, a connecting-rod connecting these bell-crank levers, a slotted oscillating lever, having a changeable fulcrum, connected to the bell-crank levers, and adapted to be moved forward and downward by the bell-crank lever, pivoted in the platform of the car, and returned to its normal position by the other bell-crank lever; a lifting-lever hinged to a post on the platform of the car, a connecting-rod, connecting the lifting-lever to the bell-crank lever, pivoted in the platform of the car, means for securing the lifting-lever to the post on the platform in position, and means for disengaging the lifting-lever from the post by a treadle, attached to the bell-crank lever pivoted in the platform.

2. In a switching attachment for street-cars,

the combination with a slotted switching-lever, adapted to be shifted in its fulcrum, and with a bell-crank lever, pivoted to the platform of the car and connected to the switching-lever, of a bell-crank lever, having one end connected to the head end of the switching-lever and the other end by means of a connecting-rod to the joint of the switching-lever with operating bell-crank lever, for the purpose of shifting back the switching-lever into its normal position.

3. In a switching attachment for street-cars, the combination with a lifting-lever for operating the switching attachment, and normally secured in this position by a pivot, set in the lever and entering in a corresponding recess in the post, of a bell-crank lever, hinged to the post, engaging with its forked arm the pivot, securing the lifting-lever in position and having its other end connected to a treadle, attached to the bell-crank lever, operating the switching attachment, for the purpose of disengaging the lifting-lever from the post by means of the treadle.

4. In a switching attachment for street-cars, comprising two bell-crank levers, one pivoted in the platform of the car and the other on a bracket underneath the car, a connecting-rod connecting these bell-crank levers, a slotted oscillating lever, having a changeable fulcrum, connected to the bell-crank levers, and adapted to be moved forward and downward by the bell-crank levers, pivoted in the platform of the car, and returned to its normal position by the other bell-crank lever; the combination with the switching-lever of a roller, set in a slot in the hooked end of the switching-lever and adapted to carry the edge of the switching-lever above the ground.

5. In a switching device for street-cars, comprising two bell-crank levers, one pivoted in the platform of the car and the other on a bracket underneath the car, a connecting-rod, connecting these bell-crank levers, a slotted oscillating lever, having a changeable fulcrum, connected to the bell-crank levers, and adapted to be moved forward and downward by the bell-crank lever, pivoted in the platform of the car, and returned to its normal position by the other bell-crank lever; the combination with a switching-lever having a roller revolving in a pivot secured to one side of the head of the switching-lever, of a block or lifting-lever rail, set on the side of the slot wherein the switching-lever engages, for lifting the switching-lever out of the slot.

In witness that I claim the improvements described in the foregoing specification I have signed my name in the presence of two subscribing witnesses.

EMIL BALZER.

Witnesses:

M. D. HOGAN,
EUGENE F. HUGHES.