

(No Model.)

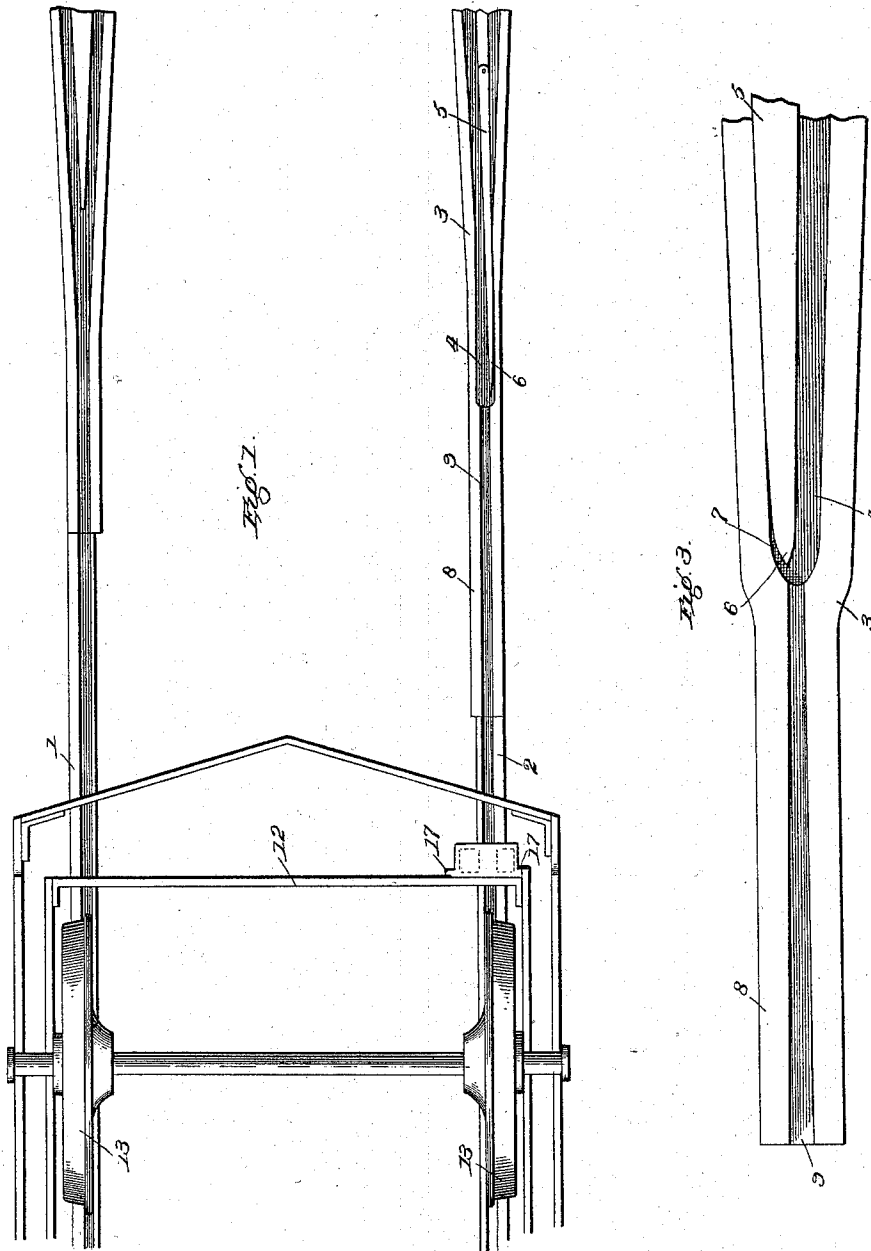
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A. C. L. ENGSTFELD.

SWITCH OPERATING DEVICE FOR TRAM CARS.

No. 530,302.

Patented Dec. 4, 1894.



Witnesses

Harry D. Rohrer.
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Inventor

A. C. L. Engstfeld

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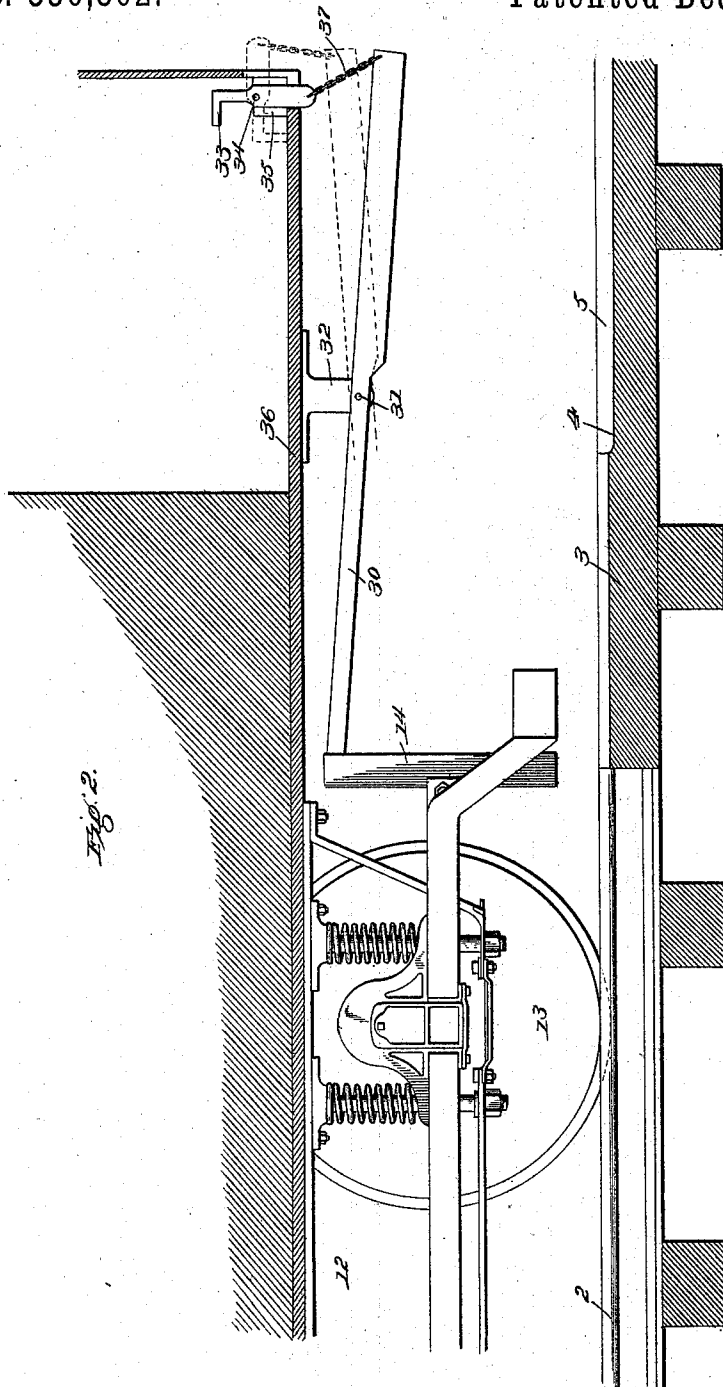
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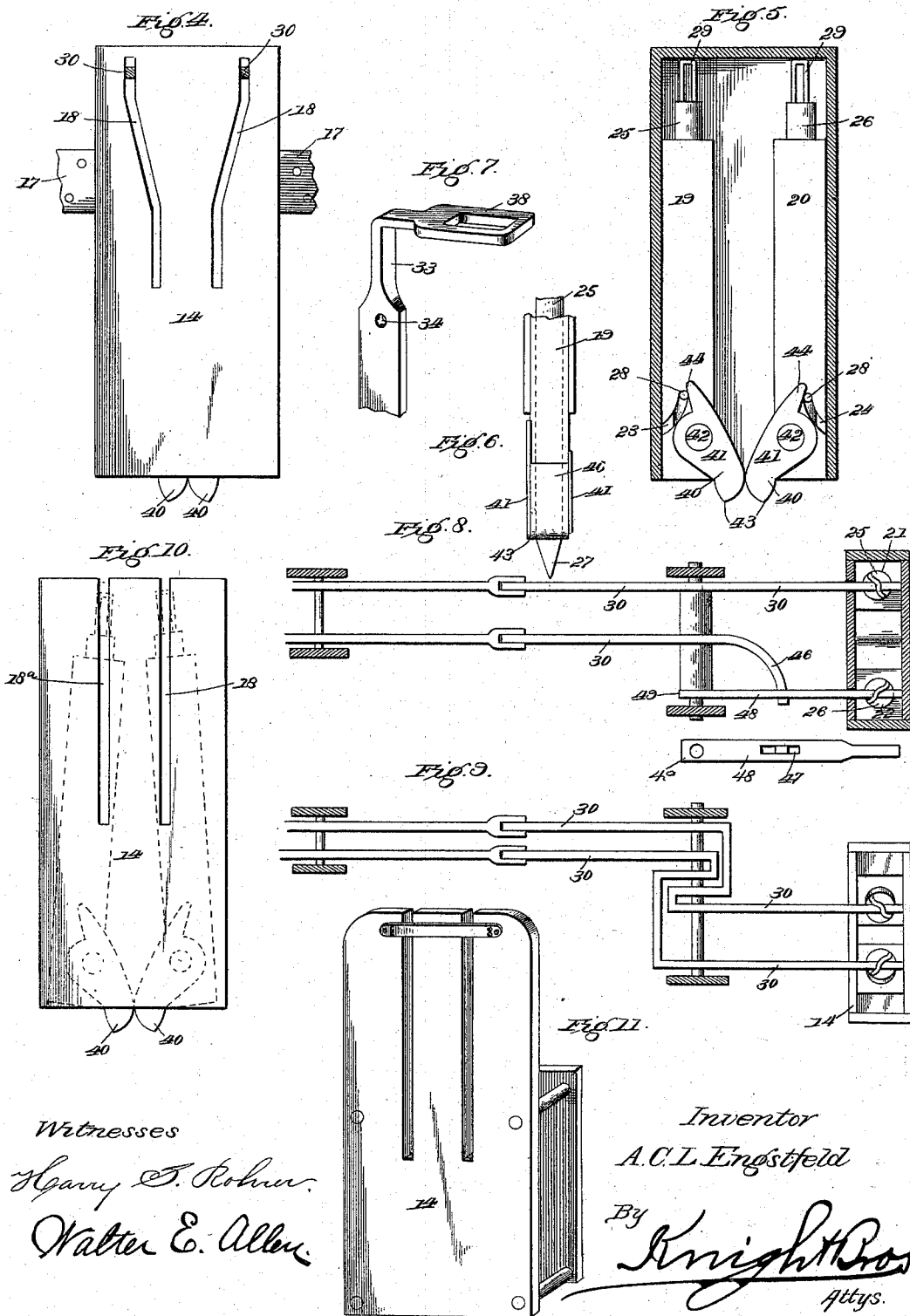
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UNITED STATES PATENT OFFICE.

AUGUSTIN CHARLES LOUIS ENGSTFELD, OF CLEVELAND, OHIO, ASSIGNOR
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SWITCH-OPERATING DEVICE FOR TRAM-CARS.

SPECIFICATION forming part of Letters Patent No. 530,302, dated December 4, 1894.

Application filed January 22, 1894. Serial No. 497,679. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTIN CHARLES LOUIS ENGSTFELD, a citizen of the United States, residing at Cleveland, Cuyahoga county, Ohio, have invented a new and useful Improvement in Switch-Operating Devices for Tram-Cars, of which the following specification, taken in connection with the accompanying drawings, is a full, clear, and exact description, such as will enable those skilled in the art to make and use the same.

My invention relates to improvements on the switch operating device covered by my Patent No. 503,474, of August 15, 1893, in which there is a vertically movable rotatable shifting blade carried by the car and adapted to be moved into engagement with the pivoted tongue of a switch and be rotated for shifting the switch. In my said patented device it is necessary to provide shallow grooves in the frog casting leading to each side of the depression in which the pivoted tongue operates, so as to guide the shifting blades into engagement with the pivoted tongue. These grooves are not found in the switch frog commonly employed, and consequently are objectionable as they increase the cost of manufacture and render it necessary to materially change the form of switch frog now in use.

The main object of my present invention is to do away with the lead grooves above referred to, and to this end my invention consists in providing suitable guides for the shifting blade which will insure engagement of the blade with the switch tongue when it is lowered into position. The guide is mounted upon the vertically movable casing which surrounds the shifting blade, and is adapted to engage in the customary central groove of the frog casting and lead the blade into engagement with the switch tongue. The guide is held in position for engagement with the groove of the frog casting by means of a lug on the shifting blade, but when the shifting blade drops into the depression in the frog casting, the guide is released and moved up out of the way.

My invention consists of other features of novelty all of which will first be described with reference to the accompanying drawings,

and afterward more particularly pointed out in the claims.

Figure 1 is a plan representation of my improved automatic switch operating device, a portion only of the car truck being shown. Fig. 2 is a side elevation of the same, showing the operating lever in position, and the frog casting in section. Fig. 3 is an enlarged detail plan view of the switch rail and tongue. Fig. 4 is an enlarged front elevation of the shifting devices attached to the car truck. Fig. 5 is a detail sectional view of the same. Fig. 6 is a detail side elevation of a portion of one of the shifting devices. Fig. 7 is a detail perspective view of the foot operating lever. Figs. 8 and 9 are detail views of modified arrangements of operating levers. Fig. 10 is a modified arrangement for supporting the shifting devices. Fig. 11 is a perspective view of an open-sided box for holding the shifting devices.

1, and 2 are the main track rails.

3 is a common form of frog casting formed with the usual central depression or recess 4 in which is pivoted the tapered switch tongue 5. The tongue 5 is tapered at its forward end 6 and the recess 4 beveled so as to provide a small space such as 7 between the end of the tongue and the frog casting in either position of the tongue, as set forth in my patent above referred to.

8 is another section of the frog casting which forms a continuation of the frog 3, and is provided with the usual flange groove or switch lead 9 extending to the forward end of the recess 4 of the switch frog.

12 is any approved form of car truck mounted on the wheels 13.

Secured to the front frame piece of the truck frame in front of the forward right wheel is a boxing 14 in which are supported my improved shifting devices. This boxing 14 consists of a metallic casing formed of steel or iron plates and secured to the truck frame by the lugs 17. 18 and 18^a are slots in the front wall of the boxing 14. These slots extend vertically at the upper and lower ends, and on an incline between the ends, as shown in the drawings, for the purpose which will presently be explained.

19 and 20 are a pair of square sliding boxes or casings fitting in the boxing 14, and adapted to move vertically therein. These casings 19 and 20, are formed with cylindrical openings or bores 21 and 22 respectively extending longitudinally through them, and slanting slots 23 and 24 respectively, as clearly set forth in my patent above referred to.

25 and 26 are the shifting rods which are supported in the boxes 19 and 20. Each shifting rod is formed with a thin blade 27 at its lower end, (which is preferably wedge-shaped) a circular lug 28 projecting from its front edge and engaging in the slot 23 or 24 of the casing 19 or 20, and a supporting loop or strap 29 attached to its upper end for the reception of the end of the supporting and operating lever 30. The casings 19 and 20 are supported upon the lugs 28 and move vertically with the shifting rods unless their movement is obstructed, in the same way as in my patent.

An operating lever 30 is provided for each of the shifting devices. The levers 30 are pivoted at 31 to the bracket 32. The rear ends of the levers 30 pass through the slots 18 and 18^a of the boxing 14, and engage in the loops 29. The vertical movement of the ends of the levers 30 in the slots 18 carries the shifting devices vertically as in my former patent, and on account of the angular direction of the grooves 18 and 18^a moves the devices slightly sidewise at the same time for bringing the guides and shifting blades properly over the lead groove 9 of the frog, when it is desired to operate the switch. This is necessary because it is impossible to support both devices directly over the proper point. This operation will be clearer from the description which will follow.

The supporting loops 29 are constructed as in my patent so as to allow the partial rotation of the shifting bars.

33 is a foot lever pivoted at 34 in the boxing 35 which is supported upon the platform 36 of the car body, and 37 is a chain connecting the lower end of the lever 33 to the forward end of the operating lever 30. The foot lever 33 is formed with the right angled portion 38 having the loop for the reception of the foot. The lever is adapted to be operated as indicated by dotted lines, for operating the shifting devices. The weight of the forward end of the lever 30 must of course be sufficient to overcome the weight of the shifting devices.

Extending inwardly from the side of each of the sliding boxes 19 and 20 is a dog or guide 40 which is formed with the side plates 41 which partially embrace the boxes 19 and 20 and are pivotally mounted upon the enlarged lugs or pivots 42.

43 is the downwardly projecting engaging nose, which is adapted to be projected into engagement with the lead groove 9, for guiding the shifting blade into engagement with the pivoted tongue of the switch.

44 is a projecting finger or arm formed in-

tegral with one of the side plates 41, and adapted to engage with a lug 28 which projects from the shifting rod through the slot 18 or 18^a. The object of this is to hold the dog 40 down into engagement with the lead groove until the shifting blade has descended into engagement with the switch tongue. After the shifting rod has descended and the lug 28 is removed from engagement with the dog, it will be observed that the dog will be elevated by coming in contact with the pivoted tongue of the switch.

In Figs. 7 and 8 I have shown modified arrangements of operating levers. When it is desired to place the levers close together for saving room, one of the levers 30 can be extended to one side as shown at 46 in Fig. 8, and engage in the central opening 47 of the lever 48 which is pivoted at its forward end 49 and engages one of the loops 29 at its rear end; or when it is desired to apply the improvements to old style cars in which the steps would be in the way, both levers 30 can be extended to one side by bending them as shown in Fig. 9 and extending the pivot pin through the bends. In this latter case it might be necessary to support the shifting devices close together, and hence they could be supported as shown in Fig. 10. In this case the slots 18 and 18^a extend vertically and the shifting devices will hang on inclines as indicated in dotted lines. The slots 18 and 18^a are in proper position to guide the dogs 40 into engagement with the lead grooves 9 when they are lowered.

Fig. 11 illustrates a form of boxing which does away with side plates.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A switching device for tram cars comprising a vertically movable casing, a rotatable switch-shifting blade supported in said casing, a dog or guide pivoted to said casing and adapted to engage the lead groove of the switch frog when the casing is lowered so as to guide the blade into engagement with the switch tongue, and means for rotating the switching blade, substantially as set forth.

2. A switching device for tram cars, comprising a vertically movable casing mounted on the car and formed with a slanting or inclined slot, a vertically movable rotatable shifting bar working in said casing and provided with a lug which projects through and works in said slanting slot, means for moving said casing and bar vertically, a dog or guide pivotally supported upon the casing and adapted to engage the lead groove of a switch frog for guiding the bar into engagement with the switch tongue, and an arm projecting from the dog or guide which is adapted to be engaged by the lug of the rotatable shifting bar so as to hold the dog into engagement with the lead groove until the shifting bar is forced down into engagement with the switch tongue, substantially as set forth.

3. A switching device for tram cars, comprising a suitable boxing mounted upon the car and formed with an inclined slot in its front wall, a vertically movable rotatable
5 switch-shifting bar mounted in said casing, and an operating lever projecting through and working in the inclined slot of the front wall of the boxing and supporting and engaging the shifting bar, substantially as set
10 forth.

4. In combination with a switch-shifting device, a pivoted lever engaging said device, a foot lever 33 pivoted to the car, and formed with a right-angled loop portion 38, and a chain connecting the two levers, substantially
15 as set forth.

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Witnesses:

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