B. J. STUKENBORG & J. BELL.

Railroad-Switch.

No. 196,263. Patented Oct. 16, 1877.

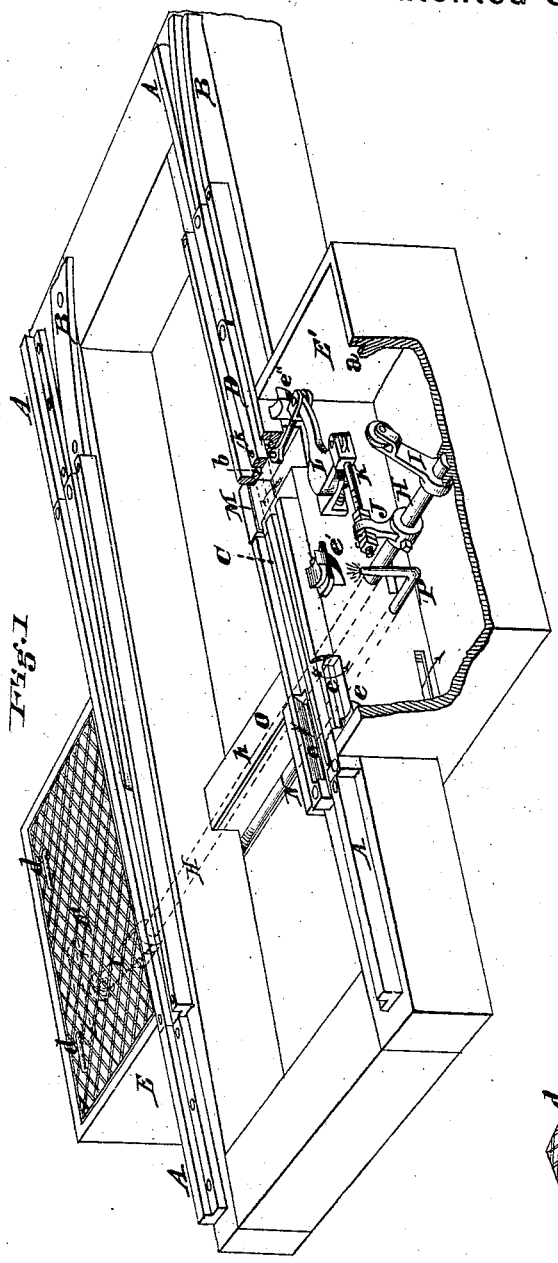

Fig. 1.

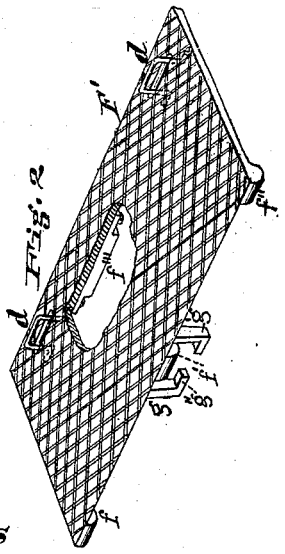

Fig. 2.

Witnesses

John E. Jones.

Edgar J. Gross

Inventors

Benj. J. Stukenborg &

Joseph Bell

By F. Millward

Attorney

# UNITED STATES PATENT OFFICE.

BENJAMIN J. STUKENBORG AND JOSEPH BELL, OF CINCINNATI, OHIO.

## IMPROVEMENT IN RAILROAD-SWITCHES.

Specification forming part of Letters Patent No. **196,263,** dated October 16, 1877; application filed March 19, 1877.

*To all whom it may concern:*

Be it known that we, BENJAMIN J. STUKENBORG and JOSEPH BELL, both of Cincinnati, Hamilton county, State of Ohio, have invented an Improvement in Street-Railroad Switches, of which the following is a specification:

The nature and objects of invention are as follows:

Our invention relates to that class of devices in which the switch-rail is moved by the weight of the draft-animals before the car reaches the switch-point.

Our invention consists, in the first part, in the provision, in connection with the switch-rail to be moved, of two tilting plates located outside of the track, one on each side thereof, so connected with the switch-rail that, when one of the plates is depressed, the switch-rail is moved in one direction and the opposite plate elevated, ready to be depressed to return the switch to its first position, the device being so operated that the weight of one animal only is used to move the switch, and the other confined to the space between the rails, where he is prevented from interfering with the movement of either plate.

Our invention consists, in the second part, in a new and improved device for connecting the tilting-plates with the switch-plate, which avoids the necessity of deep excavations for the attachments under the rail-bed.

Our invention consists, in the third part, in a peculiar device for attaching the tilting-plates to the rail-bed so as to permit of convenient removability of said plates for inspection of mechanism, repairs, &c.

Our invention consists, in the fourth part, in the provision of a gas-jet in the pits, to prevent freezing of the operating mechanism located therein and thereon.

In the accompanying drawings, Figure 1 is a perspective view of a main street-car track and a diverging track embracing our improved switch, the figure showing one of the tilting plates removed. Fig. 2 is a perspective view of the plate shown to be removed in Fig. 1.

A is the main or direct line track, and B the track diverging therefrom. D is the switch-rail, located to travel in rail-bed C. We provide, outside of the track, two pits, E E′, properly lined with metal, and upon these metal walls of the pit, adjoining the rails, we form bearings *e e′ e″*, to receive the trunnions *f f′ f″* of the tilting plates F F′. On each side of the central trunnion *f′* we form projections *g g′*, having ears or lugs *g″*, which, when the plates are horizontal, engage under the concentric exterior of the bearing *f′*, so as to prevent its being lifted up bodily or lifted up at all on the hinge side until the other side has been elevated considerably, so as to disengage the ears *g″*. The plates are put into place by dropping them edgewise into the bearings, and allowing them to swing to the horizontal position for use. When either of them is fully depressed its swinging edge rests upon the fixed stops *a*, and the opposite plate is elevated a short distance above the stops. A shaft, H, extends from side to side of the track, and rests in bearings in the walls of the pits. Each end of the shaft is fitted with a lever, I, having an anti-friction roller at the end. These levers extend from the shaft anglewise, in opposite directions from a vertical line, and the rollers of both are brought in contact with bearing-surfaces *f‴* on the under side of the tilting plates F F′; consequently, the forcible depression of either one of the two plates causes a corresponding elevation of the other, and the oscillatory movement of this shaft H is utilized in producing the necessary movement of the switch-rail by the following means:

To the shaft H, at one end only, we secure an upright arm, J, and couple its upper end to a horizontal link, K, whose other end is jointed to one of the arms of a bell-crank, L, the other arm being linked to a pin, *k*, on the under side of the switch-rail, which passes through a slot, *b*, in the rail-bed. At each side of the switch-rail we cut channels *c* in the rail-bed, to permit the switch-rail, in moving backward and forward, to force whatever dirt or snow may collect between it and the fixed rails into the pit E. The channels being in the sides only, the rail-bed is preserved under the switch-rail to properly support it.

To facilitate the removal of the plates F F′, we provide each with two staples, *d*, whose inner ends are bent to prevent the removal of them from the plates. The shanks of the sta-

ples are long enough to permit the staples to be lifted up, so as to form a loop or bale above the plate.

When not wanted as handles or bales they drop level with the plate. The bearing-surfaces $f^3$ are detachable, so that they can be backed by liners to take up wear.

By reason of the provision of the cross-shaft H, we are enabled to employ mechanism for moving the switch-rail, which needs but shallow excavations E E′ under the rail-bed, and the danger of striking street water-pipes, and caving in of the sides of the pits, or filling up with drainage, is avoided, besides the lessening of expense.

The advantage of having the tilting plates on the outside of the track, and on each side, is apparent, as they can, in the first place, be removed while the cars are running for inspection, and they avoid the central plate heretofore customary, on which it is difficult to so govern both horses as to perform the necessary movement of the switch.

By the use of our plates the team is swung to one or the other side, and the horse, thus carried on the outside of the track, depresses the plate on his side, and the other plate is quite free to rise, the other horse being between the rails.

In cold weather, gas-jets P may be kept burning in the pits E E′, under the plates F F′, to prevent the freezing of water around their edges, and the heat communicated will assist in keeping the switch-rail free of ice.

In place of the semi-rotating shaft H, we intend to employ, in some cases, a sliding bar as a modification thereof, extending across the rail-bed, to which bar the switch-rail pin *k* is connected through slot *b*, the tilting plates being provided with inclines, or equivalent, to force the bar over backward and forward by the alternate tilting of the plates; and we wish to be understood that this cross bar or shaft is not only applicable to switches having a tilting plate on each side of the track, but is conveniently applicable to switches moved by one tilting plate in the middle of the track, as the moving of this plate down at one side of its pivot will elevate the other side, and cause the bar to move the switch over, to be returned in the same way when the other side of the plate is depressed.

Under the slot *b*, at one side, the dirt falls into the pit E, and at the other side we attach a box, M, which is removable, so as to permit of cleaning out when full, the removal of the box at the same time serving to expose the space under the slot, so that it can also be cleaned thoroughly; and a similar box, N, is attached under the inner one of the channels *c*, which conducts the dirt into the pit E.

The shaft or bar H which crosses the track is surrounded by a box, O, whose cover *h* is removable.

We claim—

1. In combination with the switch-rail D, the tilting plates F F′, connected operatively thereto, and located on the outside of the track, substantially as and for the purpose specified.

2. In combination with switch-rail D and tilting plates F F′, the horizontal oscillating shaft H, having operating-levers I, and connected to switch-rail through pitman and bell-crank connection, substantially as and for the purpose specified.

3. In combination with metal-lined pits E E′ and tilting plates F F′, the bearings *e e′ e″* secured in the former, and the trunnions *f f′ f″*, and retaining-lugs *g g′ g″*, secured upon the latter, substantially as and for the purpose specified.

4. In an automatic switch, substantially such as described, the gas-jet P, arranged in the pit for warming the parts in cold weather, to prevent the formation of ice thereon.

In testimony of which invention we hereunto set our hands.

BENJAMIN J. STUKENBORG.
JOSEPH BELL.

Witnesses:
JOHN E. JONES,
J. L. WARTMANN.