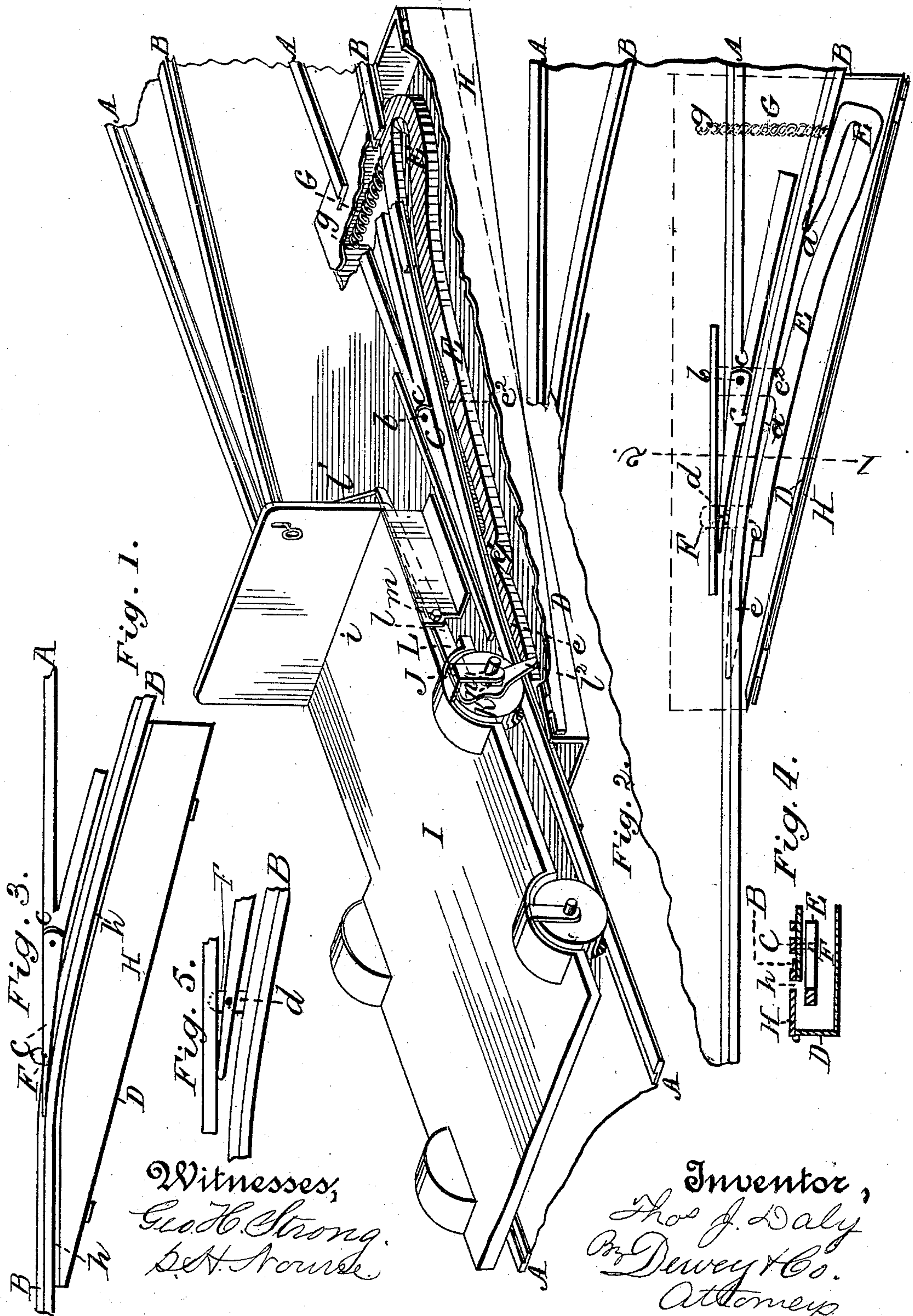


(No Model.)

T. J. DALY.
RAILWAY SWITCH.

No. 277,552.

Patented May 15, 1883.



UNITED STATES PATENT OFFICE.

THOMAS J. DALY, OF SAN FRANCISCO, CALIFORNIA.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 277,552, dated May 15, 1883.

Application filed June 26, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. DALY, of the city and county of San Francisco, State of California, have invented an Improved Railway-Switch; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to railway-switches of that class in which an arm or device attached to the car is adapted to come in contact with and operate a lever in the road-bed to throw the switch.

My invention consists in the construction of a peculiar arm attached to the car, and in the novel arrangement and construction of the actuating-lever in the road-bed, together with a swinging cover to protect it, all of which will hereinafter fully appear.

The object of my invention is to provide an automatic switch specially adapted for street-railways. By reason of its construction the switch-rail will remain normally closed, but will be thrown in readiness for the front wheel, and will thereafter be controlled by said wheel and by the arm upon the car until the rear wheel takes charge of it, after which it will close again for the straight track.

Referring to the accompanying drawings, Figure 1 is a perspective view. Fig. 2 is a plan showing the switch-rail set for siding. Fig. 3 is a plan showing lid of box D closed; Fig. 4, a section on the line 1 2, Fig. 2. Fig. 5 is an enlarged plan, showing slot *d* in road-bed.

Let A represent a straight track of a street-railway, from which diverges a track, B.

C is an ordinary switch-rail, pivoted at *c*, and adapted to be thrown to keep the straight track open or to open the side track. Under the road-bed of the side track is a box, D, within which is a horizontal lever, E. This is made with a projecting point, *e*, with a curved or inclined edge ending in a shoulder, *e'*, from which the edge extends in about a straight line, and is then curved outwardly to the end. From a cross-piece, *e''*, a space extends to the turned-up end, following the curve of the face, and into which the end *l''* of lever L drops. The lever E is pivoted under the road-bed by a pin, *b*, through the cross-piece *e''*. Through the road-bed, near the point of the switch-rail C, is made a slot, *d*, through

which an arm, F, connected with the lever E, extends. The inner end of this arm is connected suitably with the switch-rail. The relative position of the switch-rail and lever E is such that when the former is set for the main track the point *e* of the latter extends to one side of a vertical line drawn from the outer edge of the rail of the track, and its curved face presents a vertical inclined plane from this line. In this position the other end of the lever E is thrown in. In order to keep it in this position, I have a spring, G, one end of which is attached to a pin, *g*, and the other to the farther end of the lever E. By this means the forward end or point, *e*, will always be extended to one side of the vertical line from the outer edge of the rail of the track, and the switch will be set for the straight track and closed for the side track. By moving point *e* in, the switch will be set for the side track.

In order to protect the lever E from dust, obstructions, and injuries of all kinds, and at the same time furnish a means for gaining ready access to it for repairs, cleaning, &c., I have a swinging lid, H, hinged to the top of the side of box D, and extending across the top toward the rail of the track, but stopping short thereof to leave a slot or opening, *h*, for the insertion and passage of the arm, to be described, which operates the lever E. Any means for securing the cover may be adopted. It may be thrown back when necessary to get at the inside, thus providing for inspection of the parts.

Let I represent a car having a front platform, *i*.

J is the forward axle, and K a forward wheel.

L is the operating-arm. This consists of a piece or strip having a straight horizontal portion, *l*, a vertical portion or rod, *l'*, at its forward end extending up to the platform of the car, and a downwardly-extending portion, *l''*, forming with the horizontal portion an acute angle, as shown. The arm L is pivoted under the platform of the car, as shown at *m*. Its rear end has a slot, *n*, through which the axle passes. The end of the arm L, behind its pivot-point, is made heavy enough to cause it to remain with its point *l''* extending down below and in front of the wheel, upon the outer face of which it passes. It is long enough to ex-

tend down upon the outside of the rail and travel against the curved face of the point *e* of the lever *E*. When the switch is passed, by pushing forward the other end, *l'*, the arm *L* is moved on its pivot to raise its point *l*², which may be thus held by any suitable means, as by a ratchet with which the end *l'* may be made to engage.

The operation of the device is as follows:
 10 By means of the spring *G* the farther end of lever *E* is held back to expose its point *e*, and the switch-rail *C* is in line with the main track *A*. A car which is to turn to the side track approaches, and the driver releases the
 15 arm *L* to allow its point *l*² to fall down into the slot *h*. Being a little forward of the wheel, it begins to travel against the curved face of point *e* and to push it in to move lever *E* and throw the switch-rail *C* in time for the forward
 20 wheel. As soon as the wheel enters between the main and switch rails its flange, which is always on the inner side, keeps the switch-rail back as long as it travels against it. In a short car this may be sufficient time to al-
 25 low the rear wheel to enter and take charge, but in long cars it would not be. Therefore before the forward wheel loses control of the switch the point *l*² has reached the shoulder *e'*, over which it rises, (the arm *L* being
 30 pivoted,) and travels along past the cross-piece *e*² and drops down in the slot *a* beyond the cross-piece. Just then the forward wheel loses control of the switch-rail, which would naturally spring back and prevent the en-
 35 trance of the rear wheel; but this it cannot do, because the point *l*² of arm *L* presses against the outer wall of slot *a* and prevents the spring *G* from drawing that end of the lever in. This continues until the rear wheel has entered the
 40 switch. After it leaves it the spring *G* returns the lever *E* and sets the switch for the main track. Then the driver raises the point *l*² of arm *L*, and thus gets it out of the way.

The advantage of having the switch held
 45 by a spring is not only to keep the switch set for the main track, but also to prevent the wheels of other vehicles from affecting it. If the spring should break, the point *l*², traveling against the inner wall of slot *a*, would
 50 force the lever in to throw the switch-rail back to position. There is also an advantage in having the arm *L* guided by being slotted upon the axle, as it is the most convenient place, and has no vertical play to affect it, as would
 55 be the case if the guide for the arm were attached to the body of the car.

Having thus described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. In a railway-switch, the pivoted switch-rail *C*, in combination with the horizontal swinging lever *E*, partly under the road-bed, said lever having a point or end, *e*, with a curved or inclined face projecting to one side of the track, and connected with the switch-rail by an arm, *F*, extending through a slot, *d*, in the road-bed, and an arm or device upon the car extending down to and against the projecting face or end of the lever *E* to move said lever and throw the switch-rail, substantially as herein described.

2. In a railway-switch, the pivoted switch-rail *C*, in combination with the horizontal swinging lever *E*, having an end or point, *e*, with a curved or inclined face connected with the switch-rail by an arm, *F*, extending through a slot, *d*, in the road-bed, said lever *E* having a spring, *G*, at its other end to hold the face of the point *e* to one side of the track, and the switch-rail set for the straight or main track, and an arm or device upon the car extending down to and against the projecting face of the point *e* to move said lever and throw the switch-rail, substantially as herein described.

3. In a railway-switch, the switch-rail *C*, swinging lever *E*, having a point, *e*, at one end, a spring, *G*, at the other, arranged to draw in said end and project the end *e* to one side of the track, and an intermediate slot, *a*, and connected with the switch-rail by an arm, *F*, extending through a slot, *d*, in the road-bed, all arranged as shown, in combination with the arm *L*, pivoted upon a car, said arm having a point, *l*², slotted upon the axle and extending downwardly beside the wheel and outer edge of the track, and an upturned portion, *l'*, in front, substantially as and for the purpose herein described.

4. In a railway-switch, the tracks *A*, *B*, switch-rail *C*, underlying box or casing *D*, swinging lever *E*, connected with the switch-rail, swinging cover *H*, hinged to the box *D* and extending toward the rail to leave a slot, *h*, and an arm, *L*, upon a car, with a point, *l*², extending within slot *h* and operating the lever *E* to throw the switch-rail, all arranged, combined, and operating together substantially as herein described.

In witness whereof I hereunto set my hand.

THOMAS J. DALY.

Witnesses:

ELIZABETH V. DALY,
 EUGENE MCCARTHY.