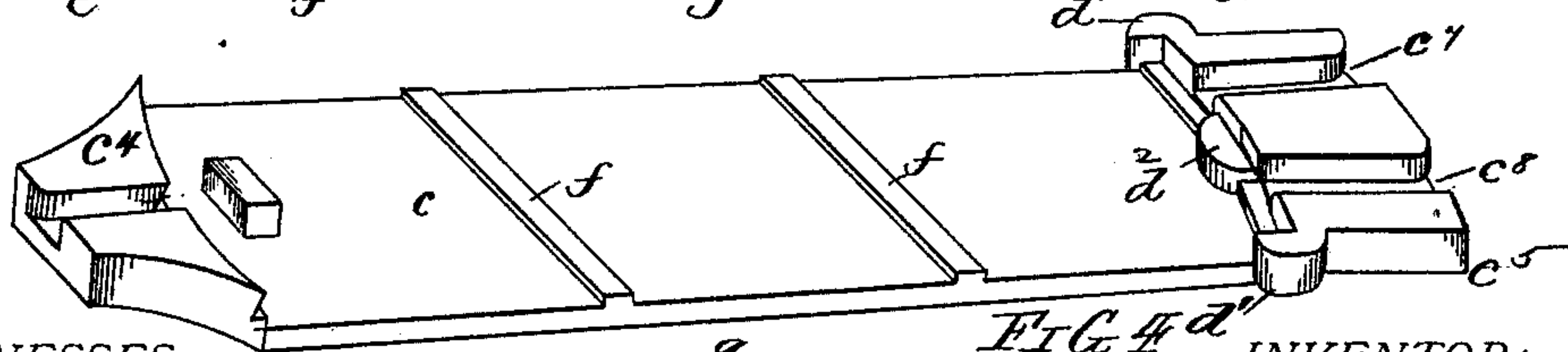
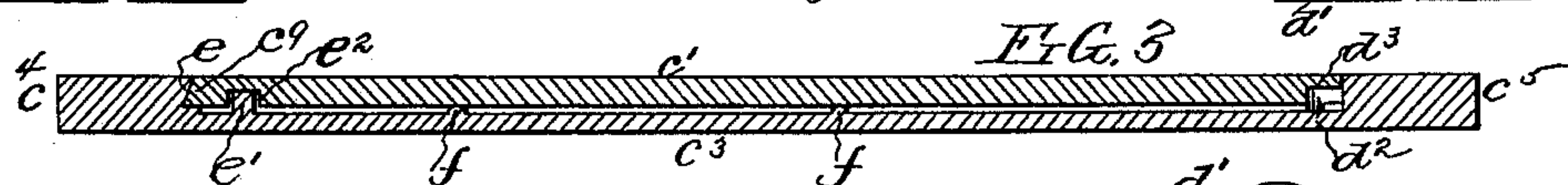
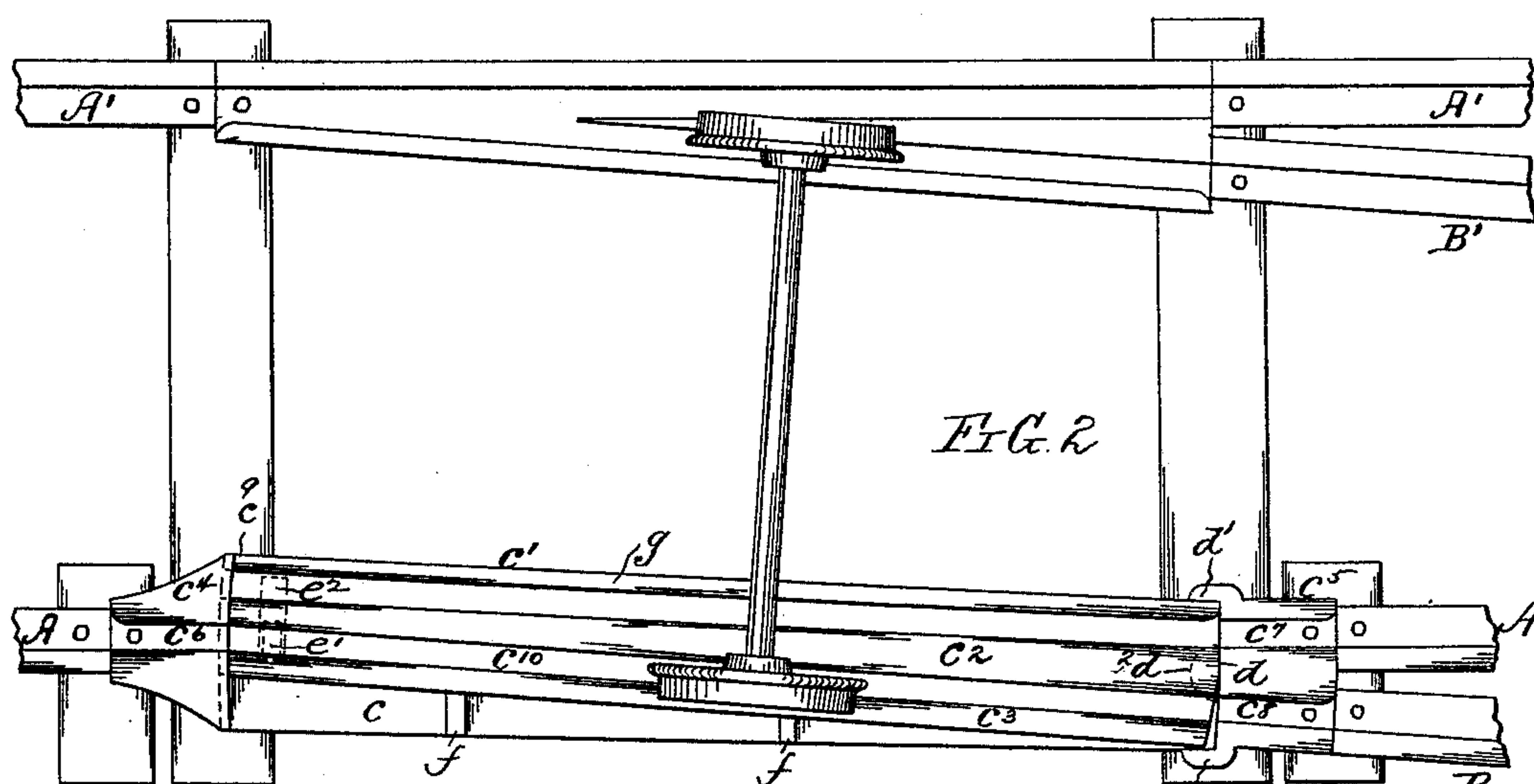
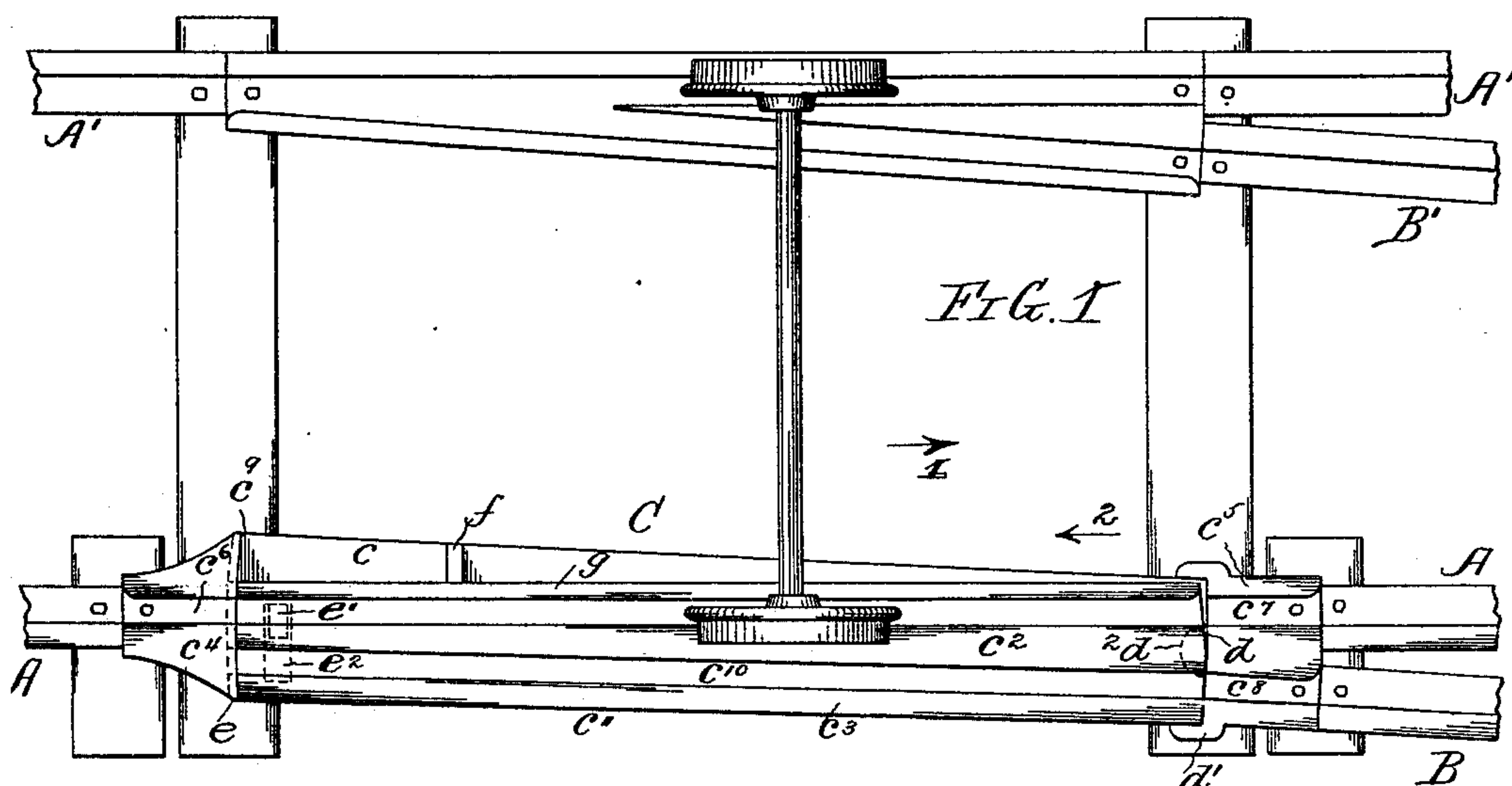


(No Model.)

E. WITSIL.  
Railway Switch.

No. 234,103.

**Patented Nov. 2, 1880.**



*WITNESSES:*

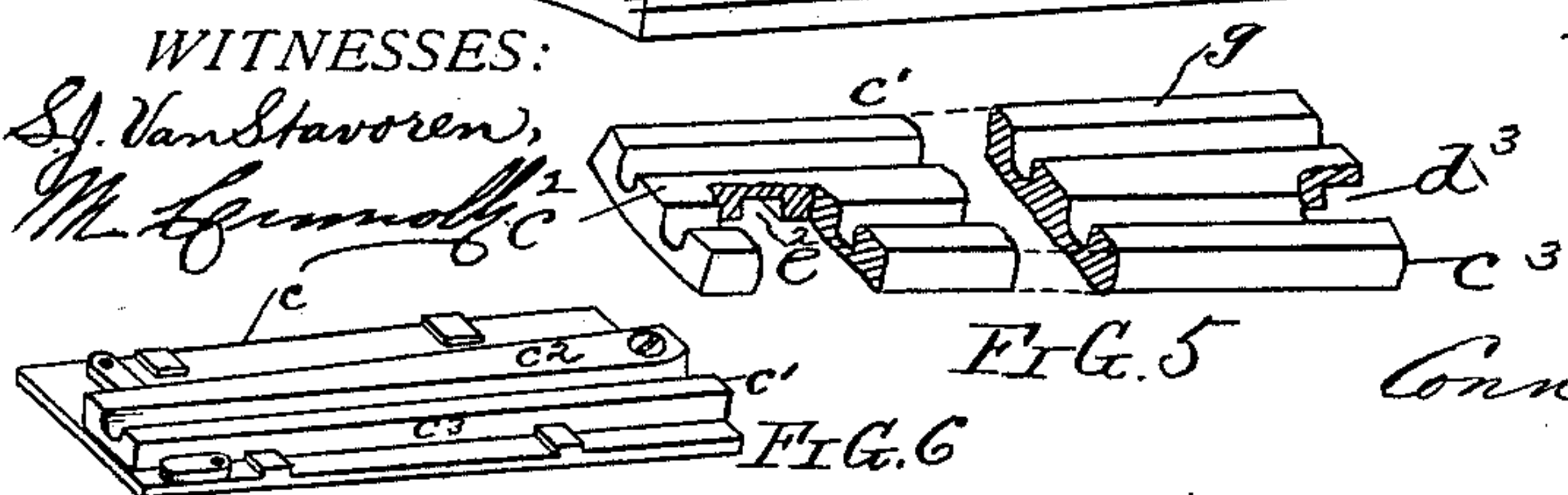
*S. VanStavoren,  
M. Lemmle*

*INVENTOR:*

Elias Pettil,

*Ry*

ATTORNEYS





# UNITED STATES PATENT OFFICE.

ELIAS WITSIL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO JAMES DOWNEY, OF SAME PLACE.

## RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 234,103, dated November 2, 1880.

Application filed June 9, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, ELIAS WITSIL, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented Improvements in Railway-Switches, reference being had to the accompanying drawings, forming part of this specification, wherein—

Figures 1 and 2 are plans of the turn-out or switch portions of a street-railway with my improvements applied thereto, being respectively shown opened for the main and side rails. Fig. 3 is a longitudinal vertical section through the tread of the switch. Figs. 4 and 5 are detail perspectives, and Fig. 6 is a perspective of a modification of my invention.

My invention has for its object to provide a switch particularly adapted for street-railways, and for the tracks of steam-railways located on paved streets and not elevated above the level of such streets. Switches of this class as heretofore generally constructed have consisted of a bed-plate with a tread and guard, both fixed in position, and a slender pivoted tongue or point adapted and designed to be swung from side to side, either against the tread or the guard, accordingly as it is desired to run a car on the main track or on the curve or siding.

My invention dispenses with this slender pivoted tongue or point, which lacks durability and is frequently defective in operation; and my improvements consist, essentially, in the peculiar construction hereinafter described, having reference principally to the provision, in place of said tongue, of a movable plate having two treads in one solid piece, one of said treads being aligned with the main rail and the other leading to the curve or siding.

Referring to the annexed drawings, A A' indicate the rails of the main track, and B B' those of the curve or siding. C is the switch, located at the intersection of said main rails and curve. Said switch consists of a bed-plate, *c*, which is designed to be firmly fixed in the ground, and a movable plate, *c'*, resting thereon and formed with two treads or rails, *c<sup>2</sup> c<sup>3</sup>*, respectively. The bed-plate *c* is cut away or formed with a recess on its top for the reception of the tread-plate *c'*, leaving a shoulder, *c<sup>4</sup>*, at one end and a shoulder, *c<sup>5</sup>*, at the other end,

with whose surface the top of said last-named plate is level. The shoulder *c<sup>4</sup>* has a groove, *c<sup>6</sup>*, for the flange of the car-wheel in line with the inside of the main rail A, while the shoulder *c<sup>5</sup>* has two grooves, *c<sup>7</sup> c<sup>8</sup>*, in line with the inside of said main rail and the rail B of the curve, respectively. The shoulder *c<sup>5</sup>* is circular or concave on the line *d*, where the end of the tread-plate *c'* abuts against it, and is extended to form two lugs or wings, *d' d'*, between which the end of said tread-plate loosely fits. A stud, *d<sup>2</sup>*, midway between said lugs on the bottom of said plate *c*, forms a pivot for the tread-plate *c'* and enters a recess or socket, *d<sup>3</sup>*, in the latter. The inner line of the shoulder *c<sup>4</sup>* is also concave or circular, and is undercut on an incline, as shown at *e*, so as to project over the beveled end *e<sup>9</sup>* of the tread-plate and prevent the latter from rising. A stud, *e'*, on the plate *c*, enters an elongated slot or recess, *e<sup>2</sup>*, on the under side of the tread-plate *c'*, and forms a stop to limit the vibration of said last-named plate at this end.

Transverse ribs are formed on the bed-plate *c*, as shown at *f f*, to reduce friction and permit the tread-plate *c'* to be moved easily, as occasion requires.

The operation is as follows: When it is desired that a car shall continue on the main track and pass the curve, moving in the direction of the arrow 1, the switch is set as in Fig. 1. When it is desired to have the car pass onto the curve the switch is set as shown in Fig. 2, the tread-plate *c'* being moved over so that its tread *c<sup>3</sup>* shall be aligned with the main rail A, or, in other words, the groove *c<sup>10</sup>*, between the two treads *c<sup>2</sup> c<sup>3</sup>*, brought into line with the groove *c<sup>6</sup>* in the shoulder *c<sup>4</sup>*. If the car should be coming off the curve, and the switch happen to be set for the main track—*i. e.*, as shown in Fig. 1—as soon as the front wheels strike the tread-plate they will move it into its right position for the purpose, as shown in Fig. 2—that is, the tread *c<sup>3</sup>* will be brought into coincidence or line with the tread of the main rail. So, too, should the car be coming on the main track in the direction of the arrow 2, and the switch be set for the curve, the wheels will move the tread-plate into the position shown in Fig. 1. The switch thus re-



quires setting only when the car is moving in the direction of the arrow 1. When such car is moving in the opposite direction or coming off the curve, it will automatically set the  
5 switch right, if not already so.

The two treads being cast in one solid piece renders the switch very durable, and hence it does not wear away fast or require frequent replacement, like the slender tongues or points  
10 of switches as ordinarily constructed.

The tread-plate presenting a broad flat surface having only the two narrow flange-grooves, it does not make any practical obstruction in the street, and hence offers no substantial im-  
15 pediment to the crossing of vehicles.

I have shown the tread-plate as having two grooves, as well as two treads, which construction leaves a guard-rail, *g*; but one of said grooves may be omitted as unnecessary, thus  
20 leaving the tread-plate with the two treads and only a single groove, which is between them, the guard-rail *g* thus being dispensed with. This modification, which is shown in Fig. 6, is clearly within the scope of my inven-  
25 tion, the operation of the switch with such construction being in every respect as already described.

What I claim as my invention is—

1. The combination of a tread-plate having  
30 two treads,  $c^2$   $c^3$ , one normally aligned with the main track and the other with the curve, with a base-plate whereon said tread-plate is pivoted and moves, said base-plate having a

stop or stops for limiting the movement of said tread-plate, so as to prevent the latter, 35 when shifted by the wheels of the car, from being swung too far in either direction, substantially as specified.

2. The combination, with a railway-track, of a rigid or stationary frog at the junction of one 40 of its main rails and the curve-rail, and a movable tread-plate at the junction of the opposite rail, said tread-plate having two treads which normally align, respectively, with the main rail and curve, and being pivoted on a 45 base-plate which is provided with stops for limiting the vibration of said tread-plate and prevent it from being shifted too far in either direction by the action of the car-wheel when automatically righting it, substantially as set 50 forth.

3. The bed-plate *c*, having shoulder  $c^4$ , undercut on an incline, *e*, and a limiting-stud,  $c'$ , substantially as shown and described.

4. The bed-plate *c*, having transverse ribs 55 *ff*, in combination with a tread-plate having a plain under surface, and adapted to be operated automatically, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I 60 have hereunto set my hand this 29th day of April, 1880.

ELIAS WITSIL.

Witnesses:

S. J. VAN STAVOREN,  
CHAS. F. VAN HORN.