

(No Model.)

C. W. SMITH & C. J. LYONS.
ELECTRIC SWITCH.

No. 438,260.

Patented Oct. 14, 1890.

Fig. 1.

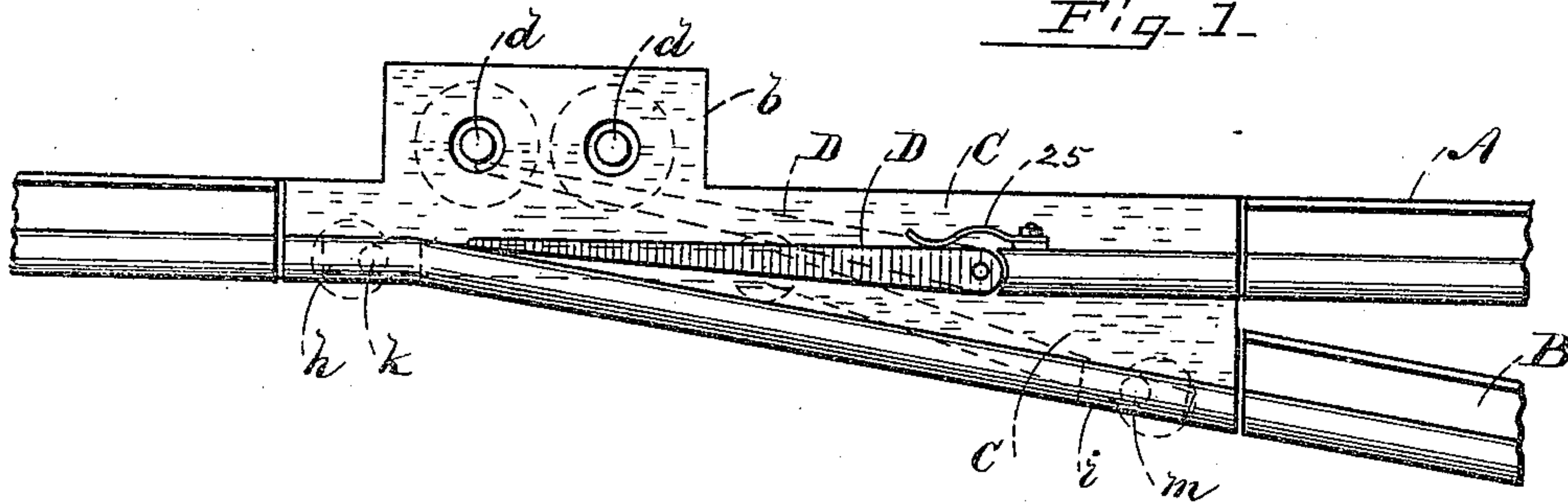


Fig. 2.

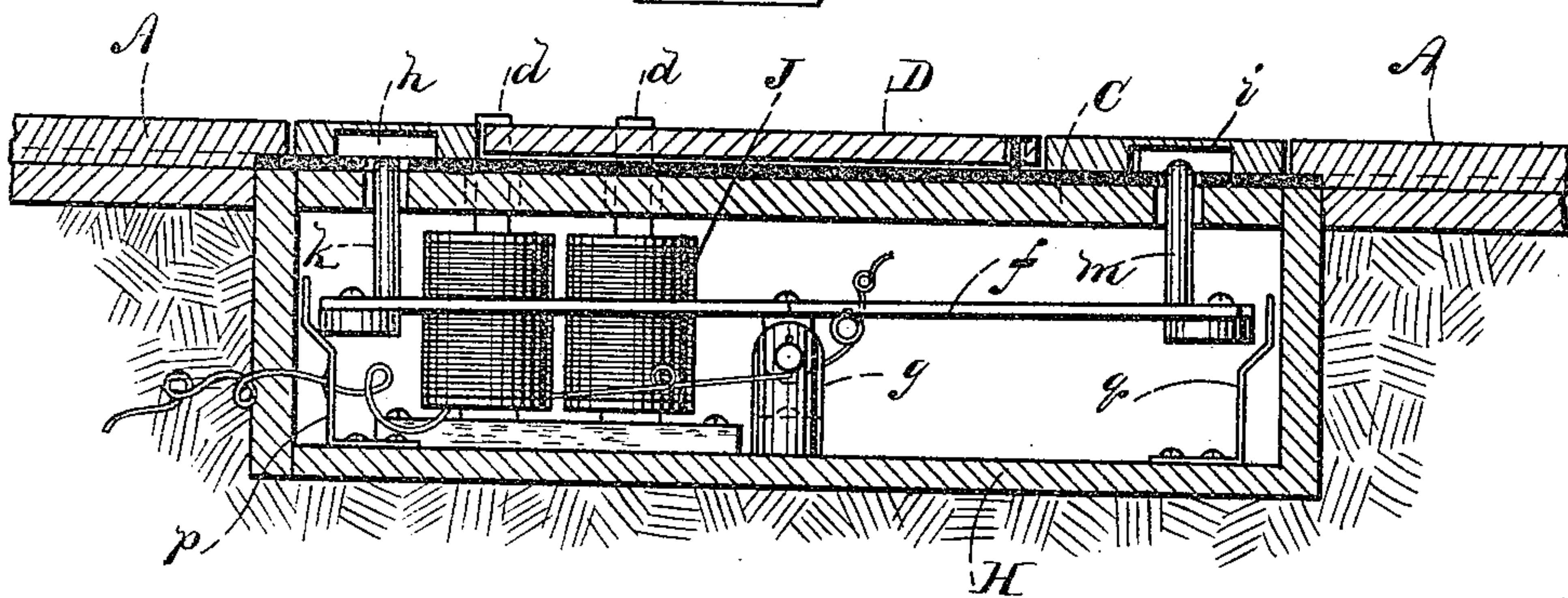


Fig. 3.

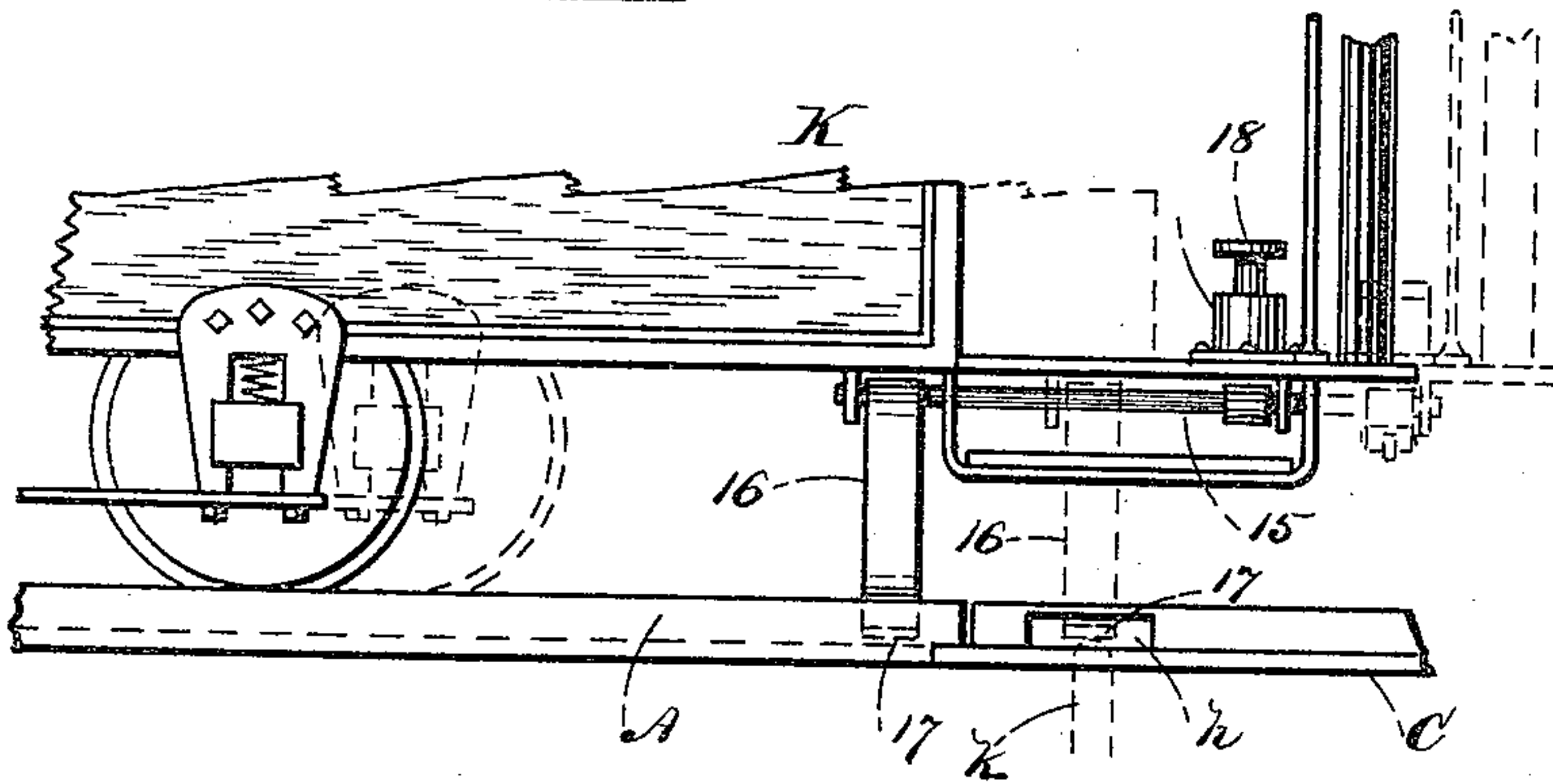
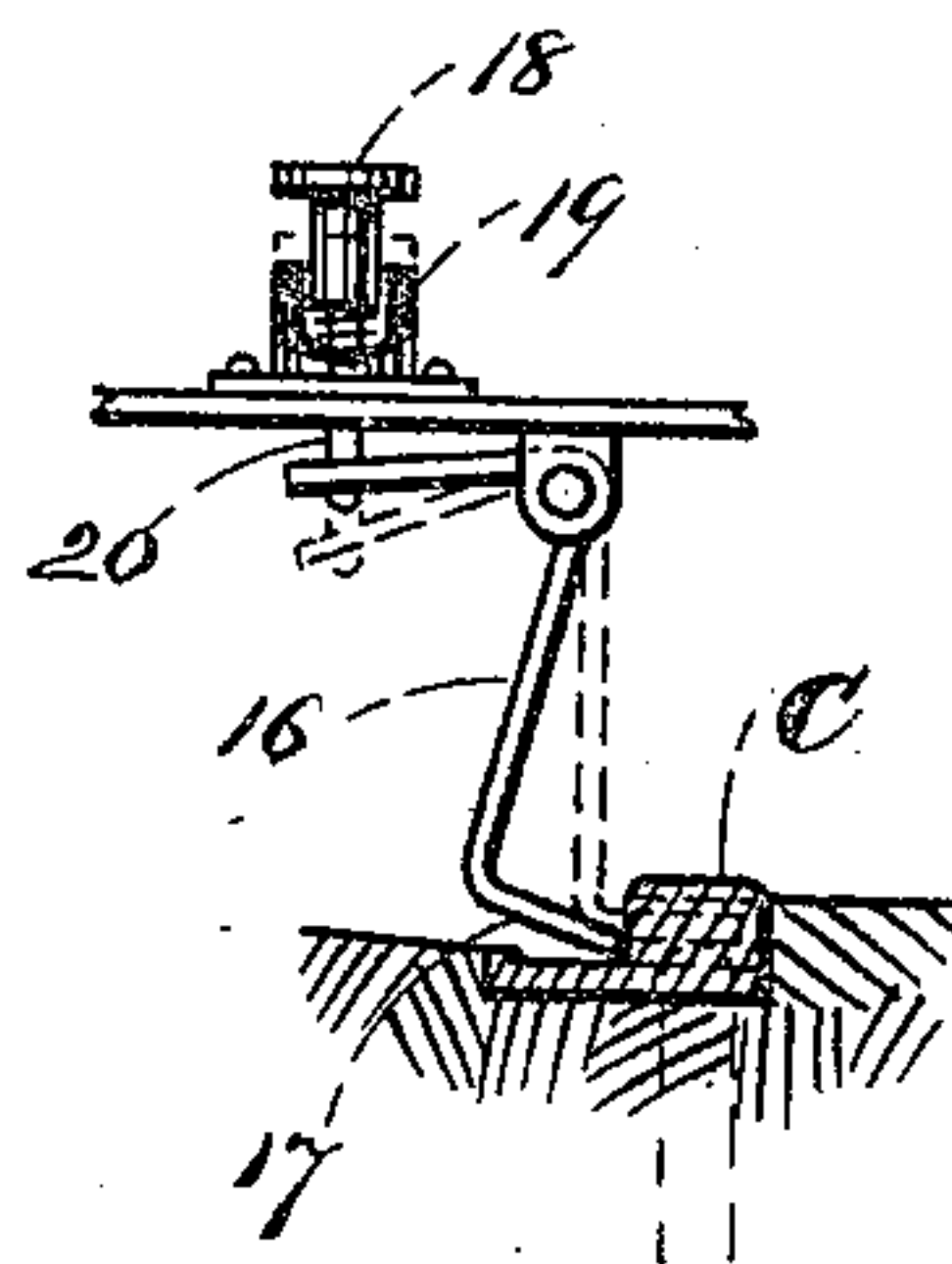


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES W. SMITH AND CORNELIUS J. LYONS, OF BOSTON, MASSACHUSETTS.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 438,260, dated October 14, 1890.

Application filed June 11, 1890. Serial No. 355,056. (No model.)

To all whom it may concern:

Be it known that we, CHARLES W. SMITH and CORNELIUS J. LYONS, both of Boston, in the county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Electric Switches for Street-Railways, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of a switch provided with our improvement; Fig. 2, a vertical longitudinal section of the same; Fig. 3, a sectional elevation of a car, showing the switch-actuating mechanism; and Fig. 4 an elevation illustrating details of construction.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

Our invention relates to means for adjusting the switch-tongue of a street-railway from the car; and it consists in certain novel features, hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A designates the main rail; B, the branch rail; C, the switch-plate, and D the tongue. These parts are constructed and arranged in the ordinary manner, excepting that the plate C is provided at its inner edge with a lateral boss or projection *b*. A rectangular box H is disposed in the road-bed below the plate C. An electro-magnet J is disposed within said box with its poles *d* projecting through the boss *b*, so that the free end of the switch-tongue D is in the field of said magnet. A horizontal lever *f* is fulcrumed in a standard *g* within the box H. Longitudinal slots *h i* are formed in the main and branch rail flange on a line with each end, respectively, of the tongue. Stud *k m*, mounted on the lever *f*, respectively project through the plate C into said slots. Two spring con-

tact-plates *p q* are disposed in the box in position to be engaged by the ends of said lever. The plate *p* and standard *g* are respectively connected by wires with the coil of the magnet and with batteries located in any convenient position. The plate *q* serves as a catch to hold the adjacent ends of the lever *f* when depressed. A stiff flat spring 25 is secured to the main track-rail, and has its free end bearing against the switch-tongue, said spring tending to throw the tongue away from the magnet-poles.

The car K is of the ordinary form and construction. A longitudinally-arranged shaft 15 is journaled under the car-platform. A lever 16 is mounted on said shaft, and is provided with a head 17 on one arm, adapted to engage the flange of the rail and project into the slots *h i*. A spring-cushioned foot-piece 18 works in a socket 19 on the platform, and a rod 20 connects said foot-piece with the upper arm of the lever 16.

In the use of our improvement, the switch being closed as in Fig. 1, to open it the driver of the car depresses the foot-piece 18, throwing the head 17 of the lever 16 against the rail-flange and into the slot *h*, where it engages the stud *k* and throws it downward into engagement with the contact-plate *p*. This closes the circuit and charges the magnet, which attracts the tongue D against the pressure of the spring 25 and opens the switch. As soon as the car-wheels have entered the branch, the head of the lever 16, entering the slot *i* in the rail-flange, engages the stud *m*, depressing the corresponding end of the lever *f* into engagement with the plate *q*, which secures it. The stud *k* is thereby thrown upward again into the slot *h* and out of engagement with the plate *p*, whereby the circuit is broken and the spring 25 permitted to act on the switch-tongue, throwing it outward and closing the switch.

By forming the slots *h i* in the rails the studs *k m* are protected from passing vehicles.

Having thus explained our invention, what we claim is—

1. An electrically-operated switch for street-cars, comprising an electro-magnet disposed in an electric circuit and having its poles so placed that the switch-tongue is in its field

and mechanism actuated by the car for closing and breaking said circuit, substantially as described.

2. An electrically-operated switch for street-cars, comprising an electro-magnet disposed in an electric circuit and having its poles so placed that the switch-tongue is in its field and mechanism actuated by the car for closing and breaking said circuit, and a spring for returning the switch-tongue when the circuit is broken, substantially as set forth.

3. In a switch for street-railways, provided with a pivoted tongue, an electro-magnet disposed in an electric circuit with its poles in position to attract said tongue, in combination with a spring for throwing the tongue away from said poles and a pivoted lever disposed in said circuit and provided with a stud at each end projecting through the track-rail, substantially as and for the purpose set forth.

4. In a switch for street-railways, a box disposed under the switch-plate, an electro-magnet disposed in an electric circuit with its poles projecting through said plate, a spring

for throwing said tongue away from said poles, and a lever pivoted in said circuit within the box and provided with studs projecting into slots in the track-rail, whereby said circuit may be closed and broken from the car, substantially as and for the purpose set forth.

5. The switch-plate C, tongue D, and spring 25, in combination with the magnet J and the pivoted lever *f*, disposed in the circuit of said magnet and provided with studs *k m*, projecting into slots in the track-rail, substantially as specified.

6. The plate C, provided with slots *h i*, and tongue D, combined with the spring 25, magnet J, lever *f*, pivoted to the standard *g* and provided with studs *k m*, and the plates *p q*, said plate *p* and standard being disposed in the circuit of said magnet, substantially as and for the purpose set forth.

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