

(No Model.)

A. E. NESPER & G. J. HABERMANN.
RAILWAY SWITCH.

No. 584,398.

Patented June 15, 1897.

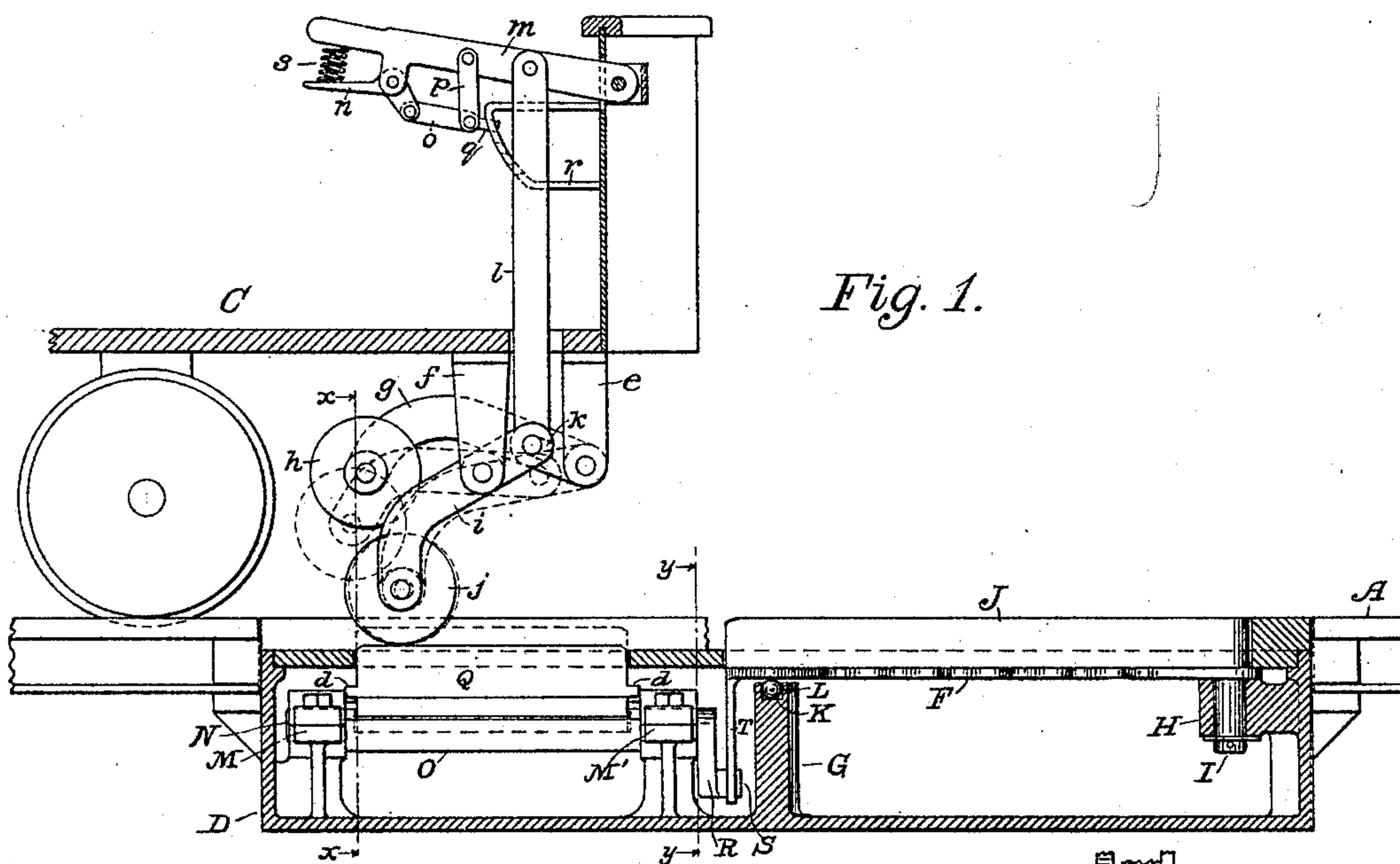


Fig. 1.

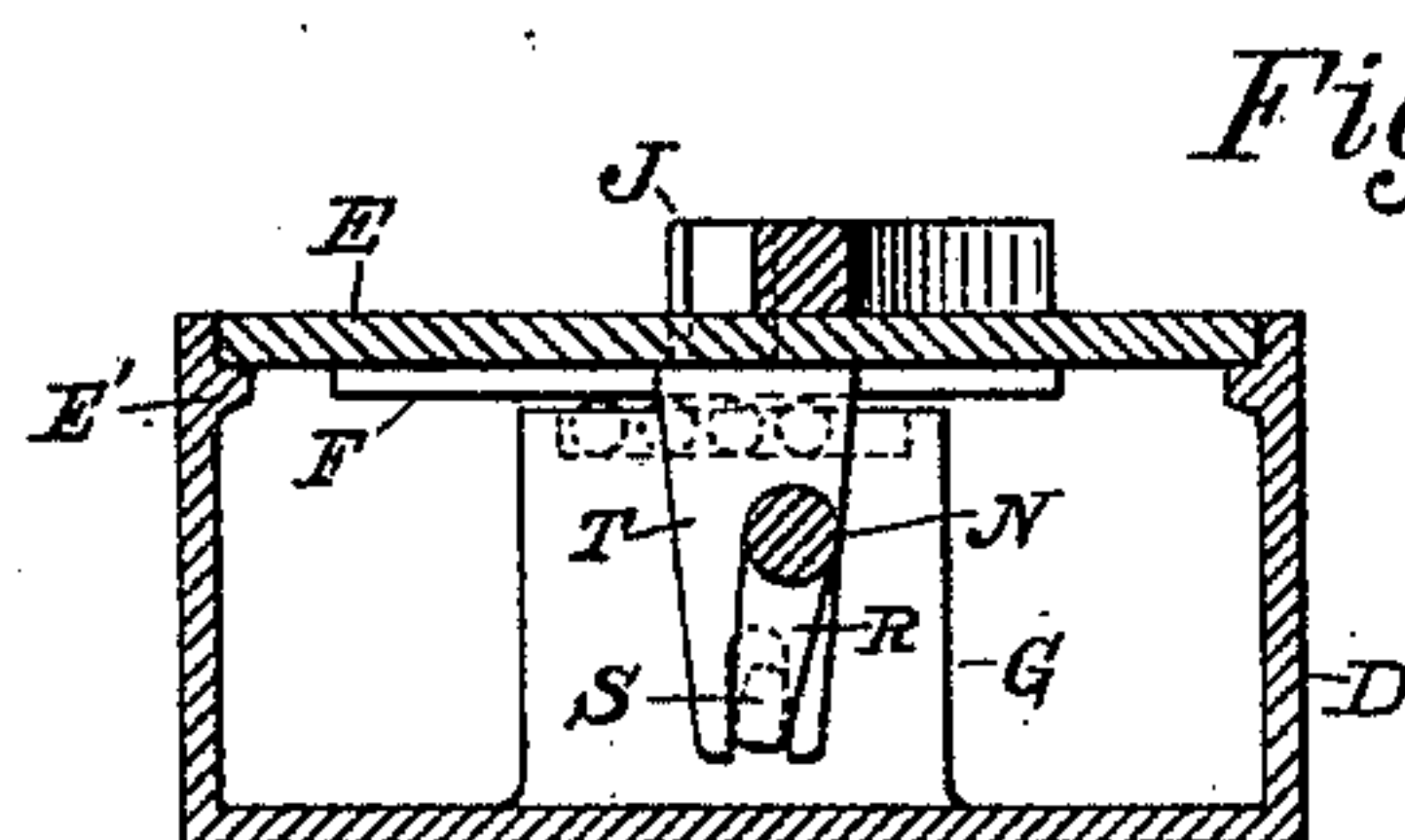


Fig. 3.

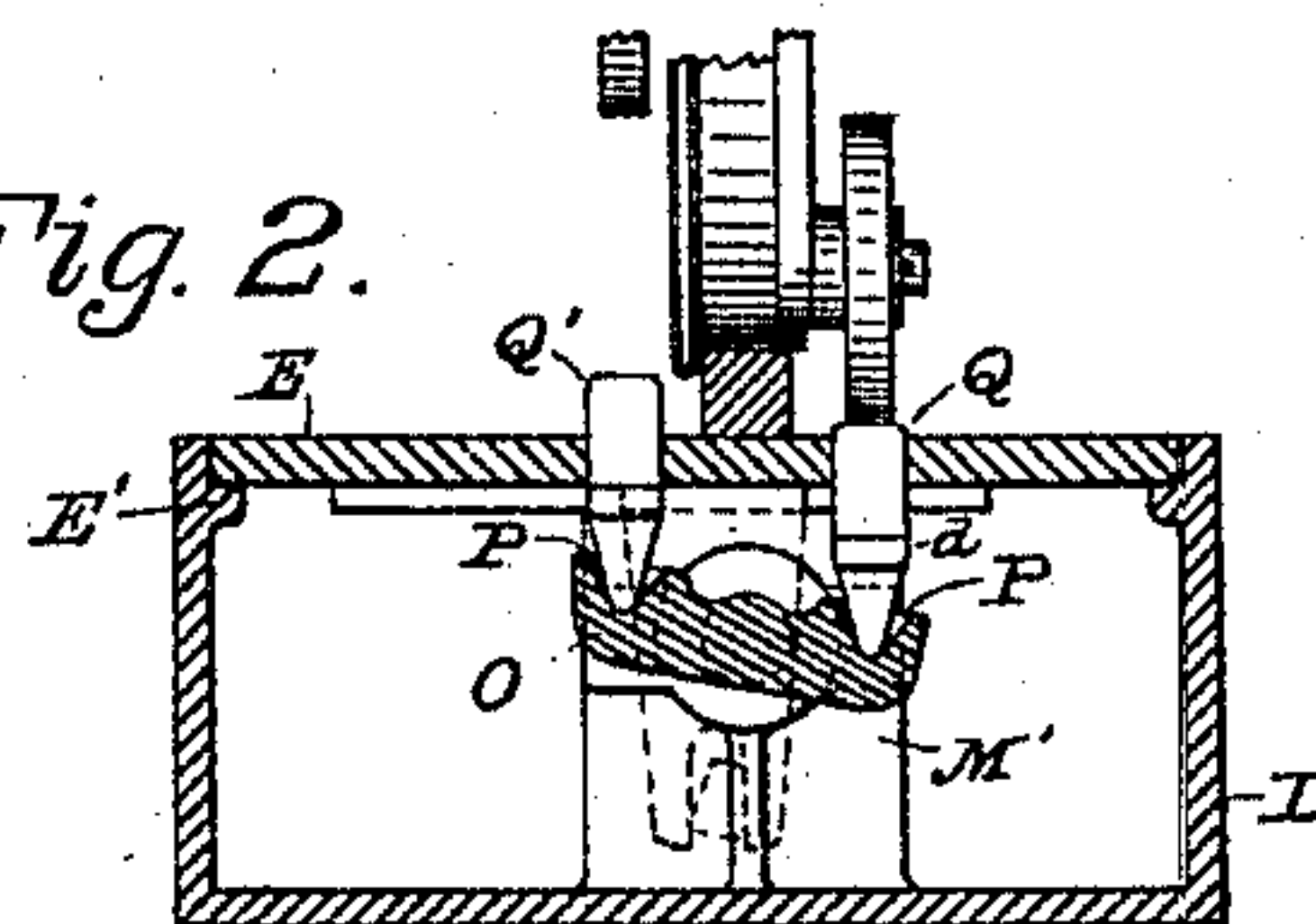


Fig. 2.

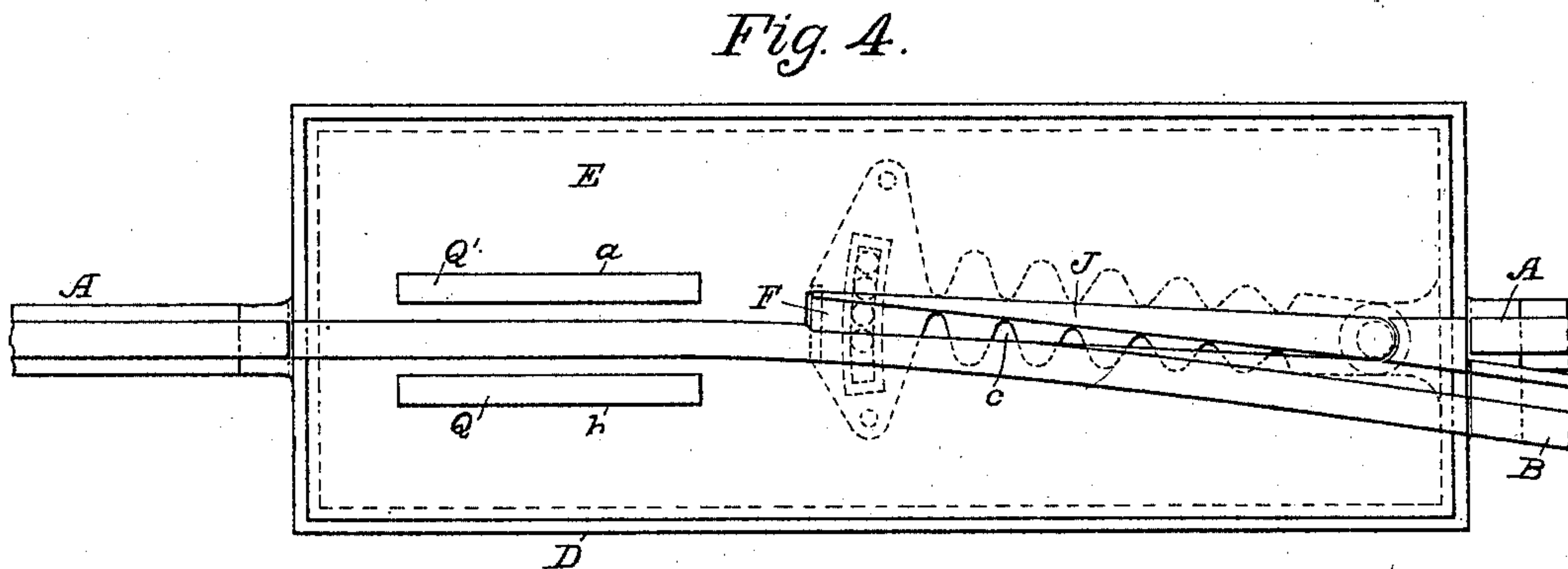


Fig. 4.

Witnesses,

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UNITED STATES PATENT OFFICE.

ARTHUR E. NESPER AND GEORGE J. HABERMANN, OF CLEVELAND, OHIO,
ASSIGNORS OF ONE-TENTH TO ALBERT B. CONKEY, OF SAME PLACE.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 584,398, dated June 15, 1897.

Application filed January 21, 1897. Serial No. 620,034. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR E. NESPER and GEORGE J. HABERMANN, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Railway-Switches, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of our invention is to provide a railway-switch that may be successfully installed upon cable, electric, or other railways and which may be easily operated from any car passing over the roads.

It frequently occurs in cities where several systems are in operation that different lines are necessarily required to pass through the same thoroughfare, in which cases the cars of the various systems are run for some distance over the same track. Upon the main line thus used a number of switches are located at different points to shunt the cars from the line to the several respective systems to which the cars properly belong. Where these conditions exist, it is very desirable to employ switches that may be operated from any of the cars, regardless of the system to which said cars belong, and one which will be capable of installation upon any system.

A further object of our invention is the production of a switch mechanism that shall comprise but few parts and which shall be constructed and arranged so that the switch will readily withstand heavy and continual traffic and be easy to operate.

To accomplish the first object, we construct the switch in such manner that the entire mechanism may be located upon one side of the track beneath one of the rails and provide actuating devices for the same that may be arranged and operated from one side of the car. By this manner of construction our switch may be used upon a cable-road without interfering in any manner with the cable-conduit or can be used upon an electric or horse railway.

With these objects in view our invention consists in the novel construction of a switch mechanism and the combination and arrangement of its various parts, as will be more fully

hereinafter described, and shown in the drawings, in which—

Figure 1 represents a vertical central section through a portion of a car provided with the switch-actuating mechanism and the switch-box. Fig. 2 is a section taken on line $x x$, Fig. 1. Fig. 3 is a section taken on line $y y$, Fig. 1; and Fig. 4 is a plan view of the switch mechanism.

In the drawings only one main rail A has been shown, together with the ordinary branch rail B, while the letter C represents any ordinary tram-car adapted to run upon the tramway.

Beneath the rail A is located a switch-box D, preferably rectangular in form and provided with a cover E, adapted to rest when in its proper position upon a flange E' upon the interior of the box near the top thereof, as plainly shown in Figs. 2 and 3. The cover is likewise provided with three longitudinal slots a , b , and c , the functions of which will be hereinafter described.

Within the switch-box and near the center thereof is an upright supporting-standard G. Rearwardly of the standard near the top of the box is arranged a lug or bearing H, provided with a center-bore, through which a pin I is adapted to pass. Mounted upon the supporting-standard and the bearing H is a movable switch-point J, pivotally secured to the bearing by means of the pin I. This switch-point is provided with a base-plate F, preferably formed integral with the point, the edges of which are corrugated to allow the dirt that may accumulate to fall into the box beneath and thus prevent clogging of the point. At the free end of this point the base-plate is enlarged in the form of a diamond, as plainly shown at F, Fig. 4, which diamond-shaped piece is adapted to rest and move laterally upon the standard G.

In order that the switch may be more easily operated, a ball-bearing is introduced beneath the free end of the movable point, which bearing is formed by providing a recess K in the top of the standard to form a ball-race and inserting a number of balls L therein.

In the forward portion of the switch-box

are located two bearings M and M', in which is journaled a shaft N. Centrally secured to this shaft between the bearings is a rock-plate O, provided on either side with V-shaped grooves P. Thrust-plates Q Q', the lower edges of which are V-shaped, are adapted to engage with the grooves in the rock-plate and project upwardly through the slots *a* and *b* in the box-top and at some distance above the same, as plainly shown in Fig. 2. The thrust-plates are further provided with extensions *d* at their ends, which limit their upward movement, and the plates are held in their proper position by the slots in the box-top, which act as guides.

The shaft N at the end adjacent to the supporting-standard has a downwardly-projecting arm R fixedly secured thereto, which arm in turn carries at its lower end a wrist-pin S, extending in a horizontal direction beneath the free end of the switch-point. This pin engages in the slotted end of an arm S, secured to and projecting downwardly from the switch-point J.

It will be seen by the construction thus described that the switch-point and the mechanism for operating the same are all located within the switch-box, which in turn is arranged beneath one of the rails of the tramway. The point is mounted upon substantial bearings that will withstand heavy traffic and the actuating mechanism comprises but few parts which when operated by proper devices upon the car will readily throw the switch from one position to another with but little effort on the part of the operator.

The actuating devices that we preferably employ may be arranged upon any car adapted to run over cable or other roads and is of the following construction:

Beneath the forward end of the tram-car and at one side thereof are two downwardly-extending supporting-arms *e* and *f*. At the free end of the member *e* is pivotally secured a curved lever-arm *g*, which passes behind the support *f* and carries at its free end a roller *h*.

i is a lever-arm similar in form to the arm *g*, which is pivoted to the support *f* at a point near the middle, carrying at its lower end a roller *j* and provided at its upper end with a slot *k*.

l is an upright bar which is pivoted to the lever-arm *g* and the free end of the arm *i*, the pin forming the pivot being adapted to have a sliding movement in the slot *k*.

m is a hand-lever pivotally secured to the front of the car to which the upright bar *l* is pivotally secured. By raising or lowering the hand-lever *m* the rollers *j* and *h* may be brought to bear upon the thrust-plates, depressing the same, thereby causing the switch to be thrown in the desired direction.

To retain the rollers in their different positions, we employ a lock, consisting of the hand-lever *n*, the links *o* and *p*, and the extension-piece *q*, which extension-piece is adapted to

be thrown into suitable apertures by means of the spring *s*, arranged within a frame *r*, attached to the cars.

The parts having been thus described and shown their operation is as follows: As the car approaches the switch, which is in position for the main line, and it is desired to depart from the same, the motorman raises the hand-lever *m*, which operates the rollers *j* and *h*, throwing the latter up and the former in such position as to come in contact with and depress the thrust-plate Q. The plate being thus forced down rocks the shaft N and causes the lever R to throw the movable switch-point, through the agency of the pin S and slotted arm T, into the position shown in Fig. 4. After the switch has been thus thrown the lever-arm *m* may be partly lowered to a position that will hold both rollers above the ground. Where an opposite throw of the switch to that just described is required, the lever *m* is forced downwardly to its lowest position, thereby raising the roller *j* and lowering the roller *h*, which will come in contact with the thrust-plate Q'. The position of the rollers in this latter case is illustrated by the dotted lines in Fig. 1.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a switch mechanism, the combination with a plurality of thrust-plates arranged in proximity to a main rail of a tramway system, a movable switch-point located beyond the thrust-plates and having suitable connections therewith, and devices for operating the plates, comprising supports attachable to the car, lever-arms pivoted to said supports and provided with rollers at their free ends, the upright bar *l* pivoted to the roller-carrying lever-arms in the manner described, and means for raising or lowering said bar, whereby the plates are depressed and the switch turned in the position desired.

2. In a switch mechanism, the combination with a switch-box provided at one end with a bearing, and in proximity to its center with a supporting-standard, a ball-bearing arranged in the standard, a switch-point mounted within the box upon the bearing and standard, said point being pivotally connected to the bearing, and adapted at its free end to move laterally upon the ball-bearing in said standard, a plurality of upwardly-extending thrust-plates mounted in the box forwardly of the point, connections between the plates and said point, and actuating devices attachable to the car for operating the plates.

3. A switch mechanism comprising the following instrumentalities: a switch-box having, in proximity to its center, a partition dividing said box into two compartments, a bearing in one of the compartments, and a switch-point therein, mounted upon the bearing and partition, a rock-shaft journaled in the other compartment, a downwardly-extending arm secured to the shaft carrying a

pin projecting laterally into proximity to the partition, and an arm connecting the pin with one end of the switch-point, a rock-plate secured to the shaft, upwardly-extending thrust-plates adapted to rest upon and engage with the rock-plate upon either side thereof, and actuating devices attachable to the car for depressing the plates in the manner described.

In testimony whereof we affix our signatures in presence of two witnesses.

ARTHUR E. NESPER.

GEORGE J. HABERMANN.

Witnesses:

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