

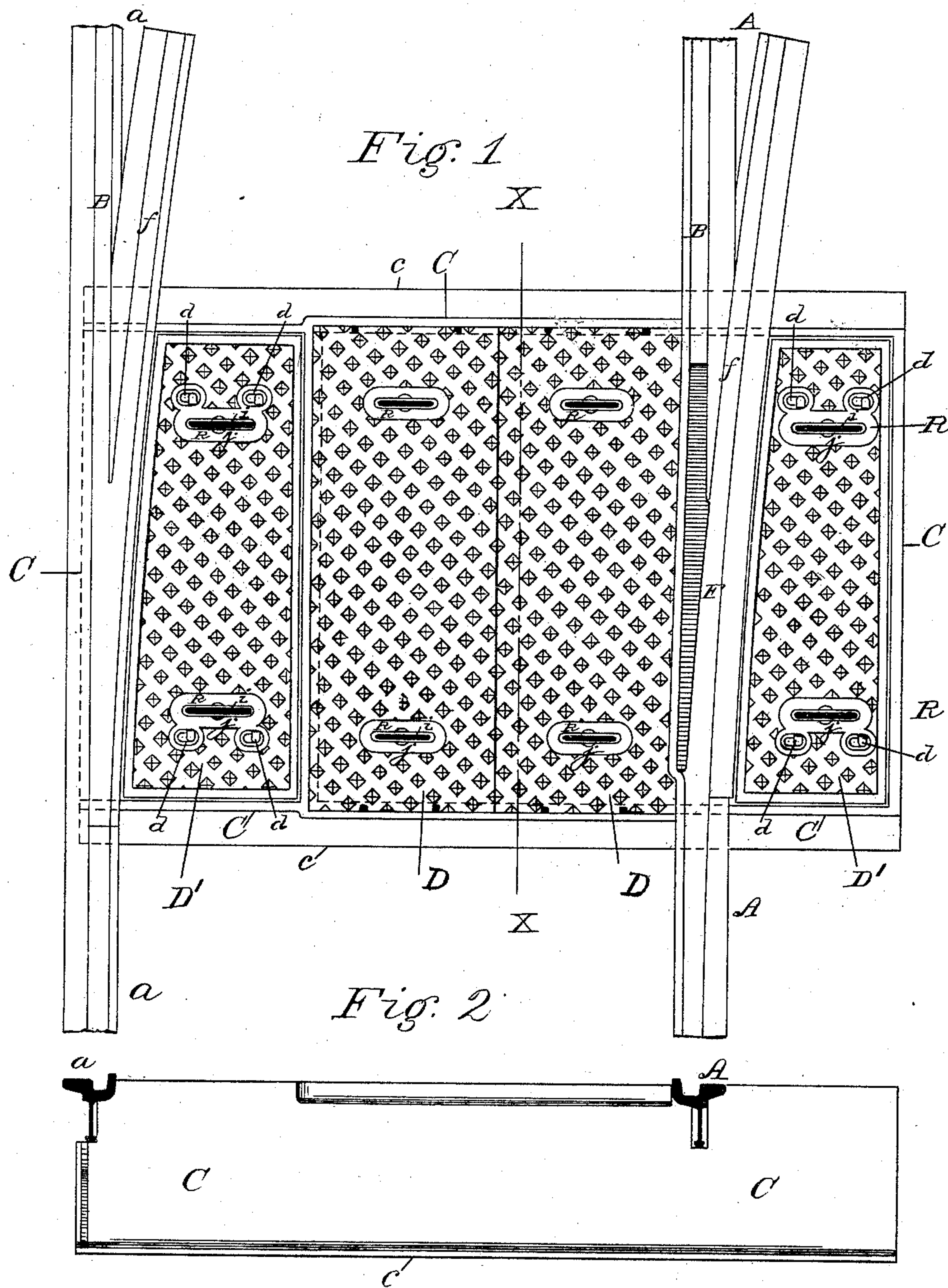
(No Model.)

3 Sheets—Sheet 1.

T. L. JOHNSON.  
STREET RAILWAY SWITCH.

No. 482,426.

Patented Sept. 13, 1892.



Witnesses:  
H. C. Evans  
Francis P. Reilly

Inventor:  
Tom L. Johnson  
by R. H. Tompkins  
Att'y

(No Model.)

3 Sheets—Sheet 2.

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Fig. 3

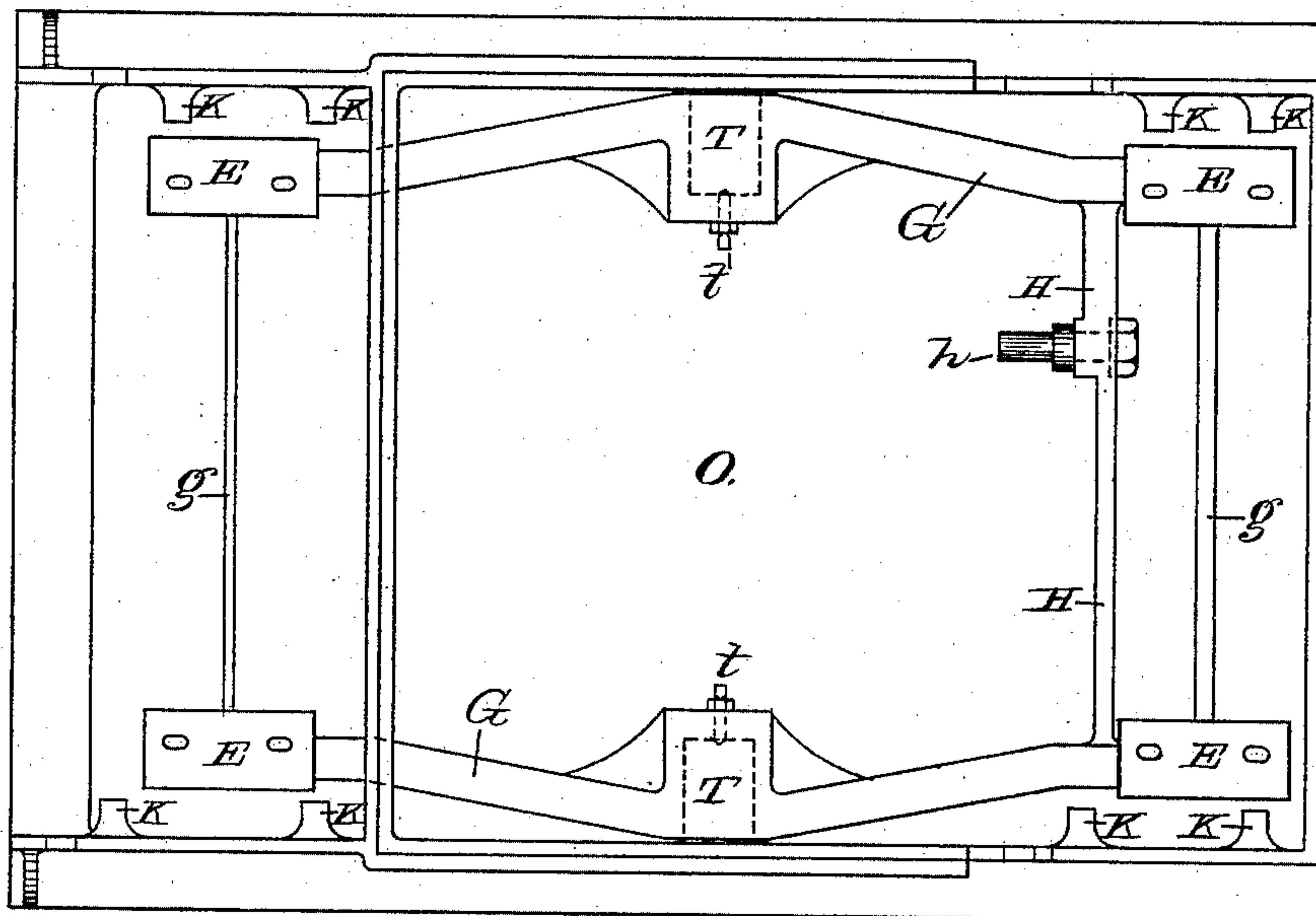


Fig. 4

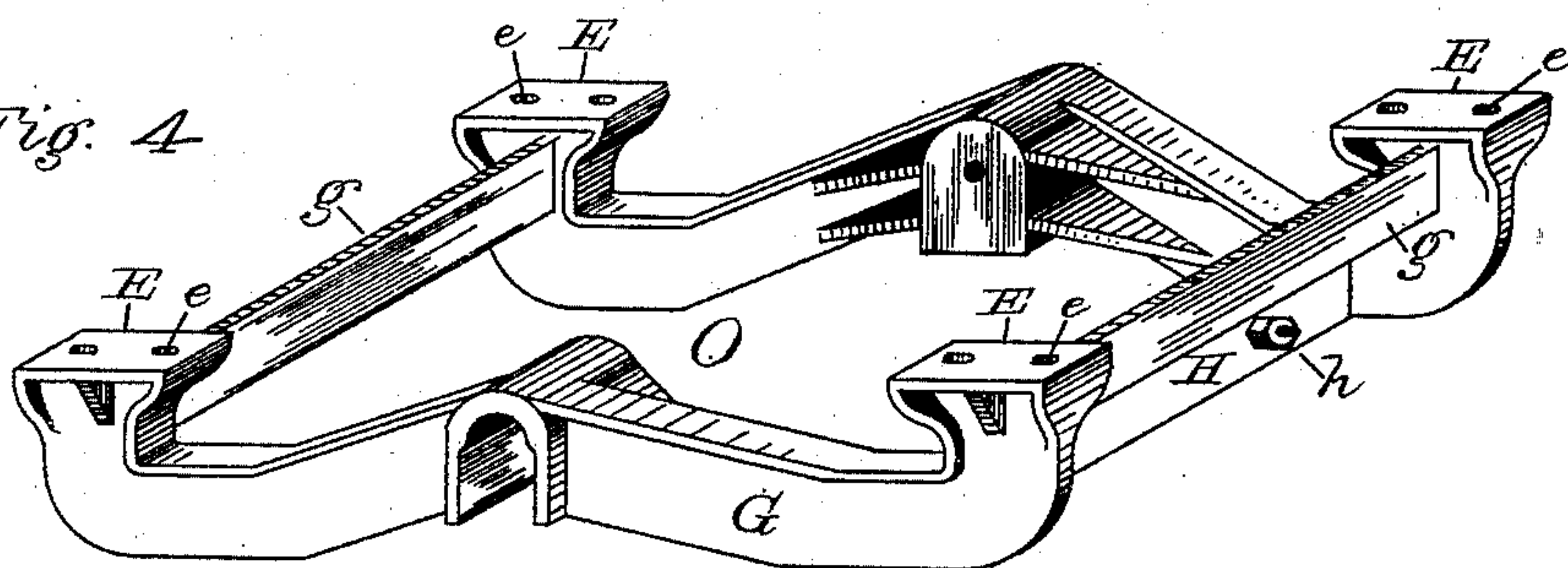
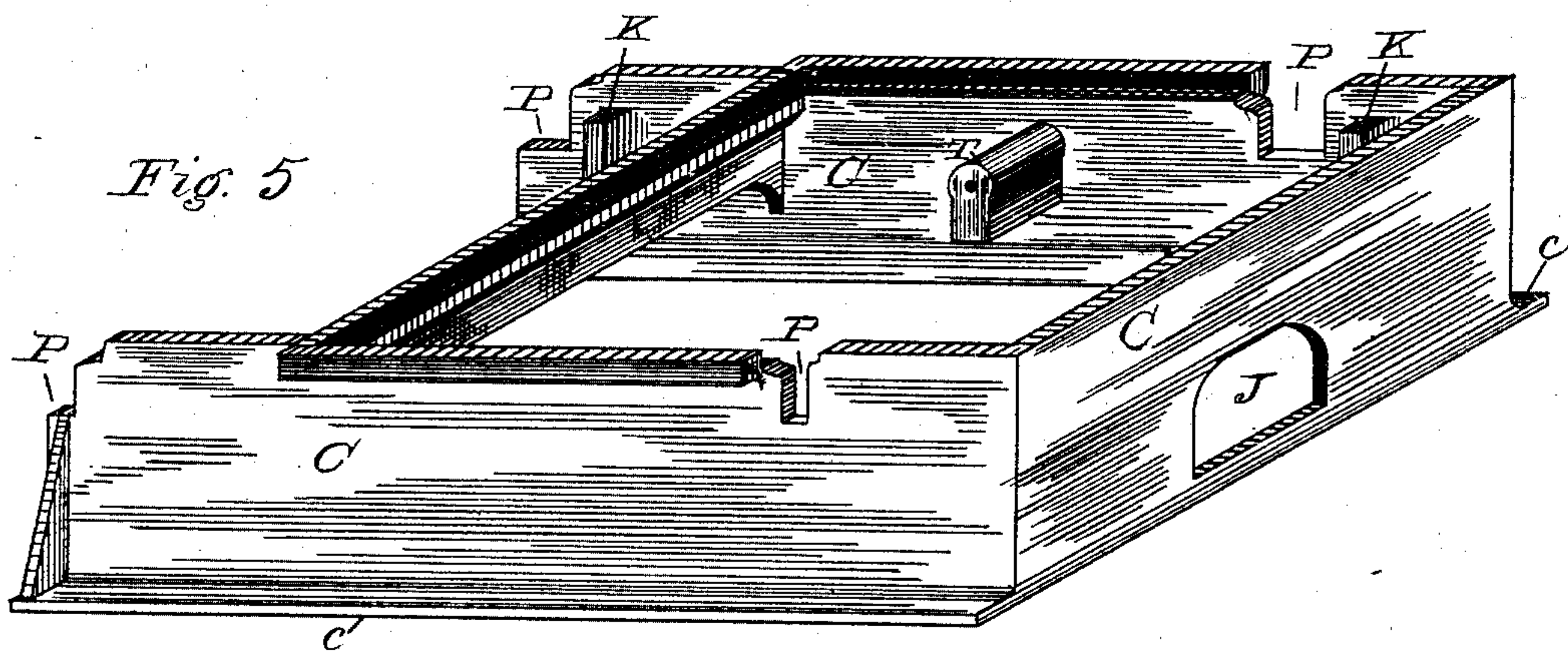


Fig. 5



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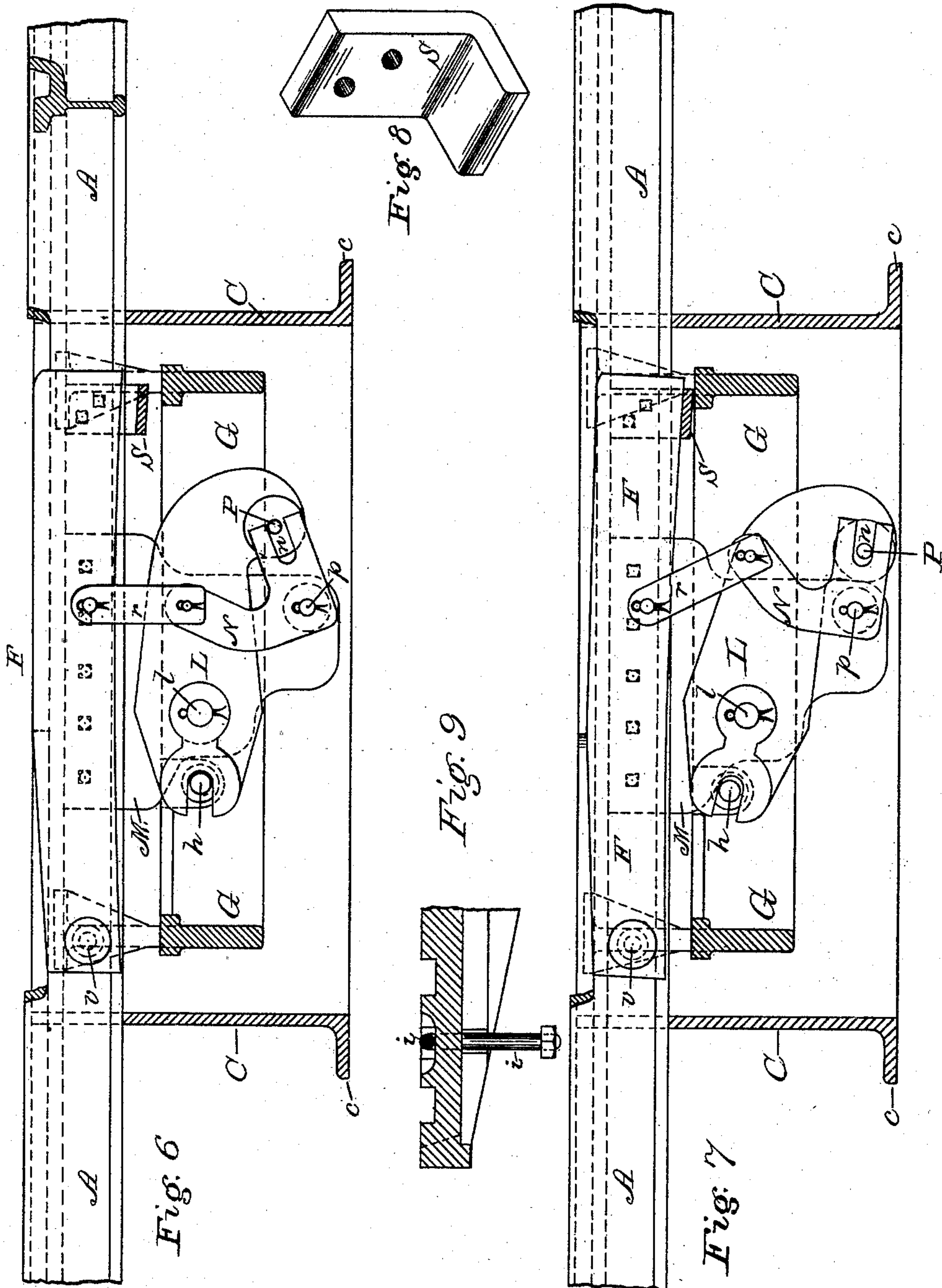
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# UNITED STATES PATENT OFFICE.

TOM L. JOHNSON, OF CLEVELAND, OHIO.

## STREET-RAILWAY SWITCH.

SPECIFICATION forming part of Letters Patent No. 482,426, dated September 13, 1892.

Application filed November 16, 1888. Serial No. 290,995. (No model.)

*To all whom it may concern:*

Be it known that I, TOM L. JOHNSON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Automatic Switches for Railway-Cars, which invention is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is sufficiently expressed in its title.

The invention will first be described in details, and then be particularly set forth in the claims.

In the accompanying drawings, Figure 1 shows in plan the switch complete. Fig. 2 shows an end elevation of Fig. 1. Fig. 3 is a view similar to Fig. 1, with the switch pieces and plates removed. Fig. 4 shows in perspective the rocking frame of the switch. Fig. 5 shows in perspective the casing of the switch devoid of all mechanism. Fig. 6 shows a part section of the casing and rocking frame, looking from the line X X, Fig. 1, to the right, the movable floor-plate (indicated by the letter F) being in its highest location. Fig. 7 is a view similar to Fig. 6, but showing the movable plate F in its lowest location. Figs. 8 and 9 show details of parts hereinafter described.

In said figures the several parts to be described are indicated by letters of reference, as follows: The switch forming the subject of this invention, herein described and illustrated, provides for the use of independent switch-pieces inserted into a frame, by means of which the switch-pieces proper as constructed can be treated as independent of the construction of the automatic part of the mechanism and its casing. This construction permits of the use of rolled-steel switch-pieces instead of limiting the automatic switch, as heretofore, to the use of cast-iron switch-pieces forming part of the switch.

In this invention the usual form of tongue-switch, wherein the tongue moves upon a vertical pivot sidewise in order to throw the car to the right or to the left, is replaced by the switch-pieces A A, in which the car is thrown to the right or to the left by means of a vertical lifting switch-plate F. This switch-plate or floor-piece when lifted makes a continuous groove in the direction *f* and throws the

car to the right. When lowered, it acts as an ordinary floor-plate, and there being nothing to change the direction of the car the car continues in a straight course through the groove B.

The mate to the lift switch-piece A A is indicated by the letters *a a*. It is evident that either a right or a left hand switch can be inserted in the casing by changing the pockets or interior mechanism of the casing to suit the same without departing from the principle of this invention. The form of rails used in the switch-pieces shown is illustrated in Fig. 2.

The casing is indicated by the letter C. This casing is of ordinary box form, provided with lower flanges *c c*, as shown in the different figures. Said flanges support the casing C upon a lower foundation of timber or brick, as may be desired.

Lifting-covers D D' are provided and furnished with recesses R, which recesses contain loosely-inserted handles *i i*. (Shown in detail in Fig. 9.) Said handles are of U form and provided with nuts on their extremities, so that when drawn up through the holes in the plates through which they are inserted the weight of the covers is borne upon said nuts. When the handles are in use, their upper surfaces fall within the recesses R and are flush with the upper surfaces of the covers. To facilitate grasping said handles when down, the recesses R are grooved out, as shown at *j*, Fig. 1, so that the hand or finger can be inserted under the handles *i*. The outside covers D' are provided with recesses *d d*, by means of which they are attached to bearings E on the rocking frame G, Figs. 3 and 4. Said outside covers may thus be secured to said bearings by means of bolts or otherwise, as may be desired, through holes *e* in said bearings. The two intermediate covers D are stationary, though lifting—that is, they are not vibrating covers, like the two outer covers D'. The rocking frame G vibrates on trunnions or bearing-surfaces T, cast upon the side of the casing C, Figs. 3 and 5, and is adjusted thereon by means of the stud-bolts *t t*, and said rocking frame is reinforced by the connecting-webs *g g*, as well as by the pivot-web H, which contains a stud or pivot *h*, Fig. 3. It will be observed that one of the webs *g* is



made heavier than the other in the corresponding mechanism on the opposite side. This is done for the purpose of properly balancing the mechanism, as the vibrating plate D' is preferably of larger size adjoining the mate switch-piece than the plate D' adjoining the vertical lift switch-piece.

The casing C is provided with pockets P, as shown in Fig. 5, to suit any section of switch-rails that it may be desired to fit into the same. Said casing is also provided with an opening J, Fig. 5, the purpose of which is as follows: In case a cleaning-out pit is located outside of the casing C, as is frequently practiced, the opening J permits of the insertion of a scoop or hoe for raking out the sediment that may have accumulated in the bottom of the working chamber. If it is desired not to use the outside cleaning-pit, the stationary center plates D are lifted and removed and the cleaning is done through the opening thus exposing the interior. A noticeable feature in the design of the rocking frame G, Figs. 3 and 4, is that thereby the whole of the central opening O is left clear and unencumbered by internal mechanism for the purpose of cleaning the interior.

Lugs K are cast upon the casing C. These lugs limit the drop of the vibrating plates D'. In Figs. 6 and 7 a lever L is centered on the stud *l*. This stud is attached to a supporting-frame M, bolted to any suitable portion of the switch-piece A. The lever L is operated by the weight of the horses or mules on the vibrating plates D', Fig. 1, through the intervention of the stud *h*. The lever L in turn moves the bell-crank N upon its center *p* through the intervention of the pin P' in the slot *n* in the bell-crank N. A pin or fulcrum P is also attached to the supporting-frame M. The other end of the bell-crank N is connected by the link *r* and the lifting switch-plate F to the switch-piece A. This switch-plate or floor-plate is hinged to the switch-piece at *v* and can lift vertically to an extent governed by the drop of the movable plates D'. Said switch-plate F is supported on its downward drop by the angle-piece S, Figs. 6, 7, and 8, which angle-piece is also attached to the switch-piece A.

The operation of the mechanism may now be described, as follows: Observing Fig. 1, if it be assumed that the floor-plate F is at its

lowest point and the car is desired to keep straight forward the driver prevents his animals from running over the vibrating plates D', and the car continues on the straight track. If it is desired to turn to the right of Fig. 1, the draft-animal is permitted to run over the right exterior plate D', by which means the lever L and bell-crank N are thrown from the position shown in Fig. 7 to the position shown in Fig. 6. This lifts the lifting floor-plate F and the car is started into the groove *f* to the right. It will be observed upon looking at Fig. 6 that this location leaves the link *r* in a vertical position and that no amount of pressure upon the lifting floor-plate F can change this position. A change can only be effected by moving the other or left plate D', which reverses the position of the switch-plate or floor-plate F by lifting the stud *h* in the slotted end of lever L.

It is evident that any type of switch-piece can be used without departing from the principle herein involved. I do not limit myself to any particular type of switch-piece, though the use of the rolled-steel switch-piece shown is preferable. It will be observed that the switch-pieces, together with the rocking frame and lever mechanism, can be treated as one system and the outside casing as another and distinct part of the mechanism, as the only connection between the two is the bearing of the rocking frame G on the trunnions T.

Having thus fully described my said improvement in automatic switches, as of my invention I claim—

1. In an automatic switch, a rocking frame, as G, provided with an auxiliary pivot-web, as H, and a pivot, as *h*, substantially as set forth.

2. In an automatic switch, in combination with a vertical lifting plate, as F, a lever, as L, a bell-crank, as N, and a link, as *r*, substantially as set forth.

3. In an automatic switch composed of rails having vertical webs, in combination with a lifting switch-plate hinged to said vertical webs and a supporting-plate, as M, connected to the webs of said rails for supporting mechanism to operate said switch-piece, substantially as set forth.

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