

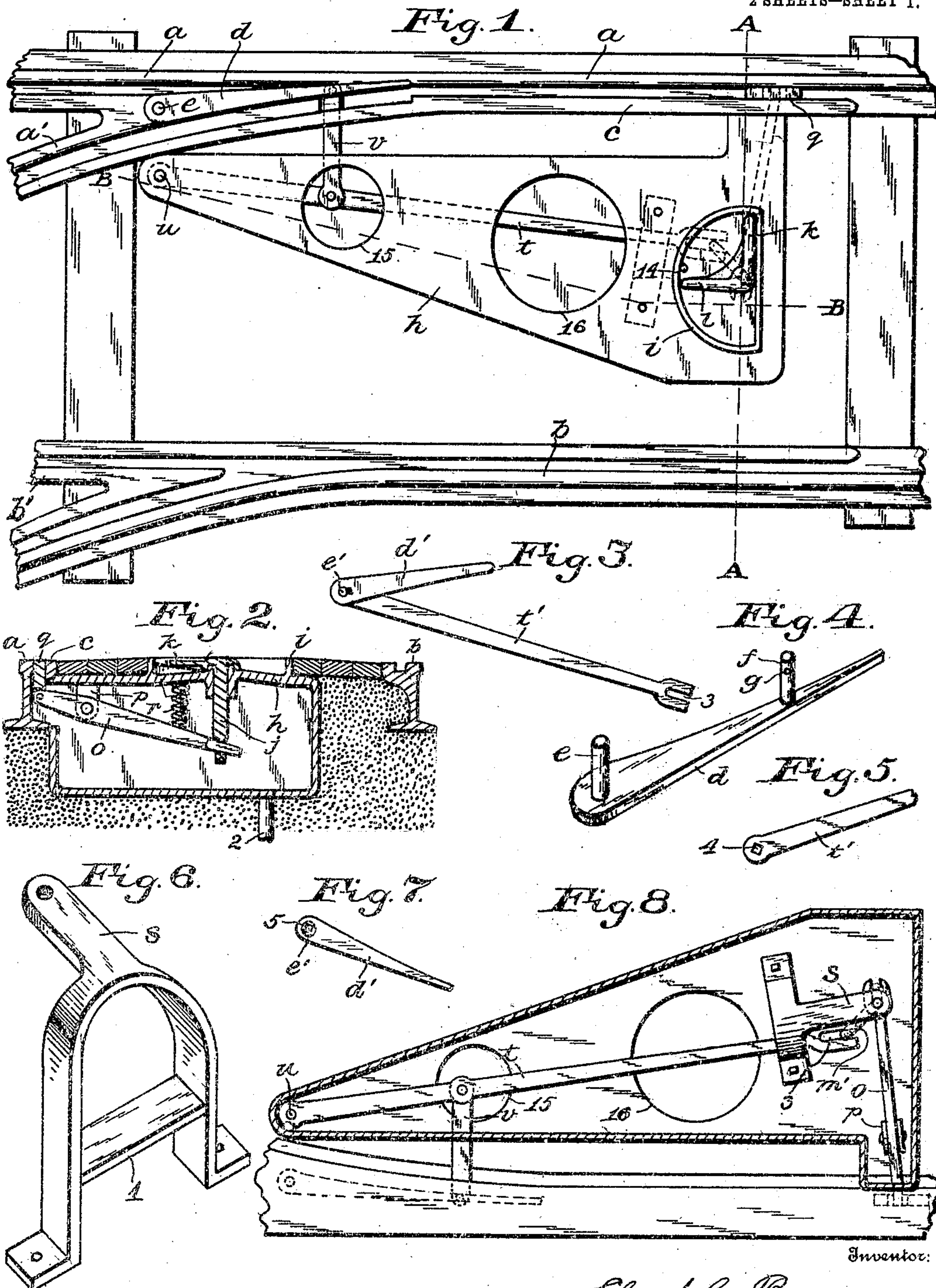
No. 788,186.

PATENTED APR. 25, 1905.

L. C. BROWN.  
AUTOMATIC RAILWAY SWITCH ADJUSTER.

APPLICATION FILED JULY 27, 1904.

2 SHEETS—SHEET 1.



Witnesses.

E. Martin.  
Stella Snider.

Lloyd C. Brown,  
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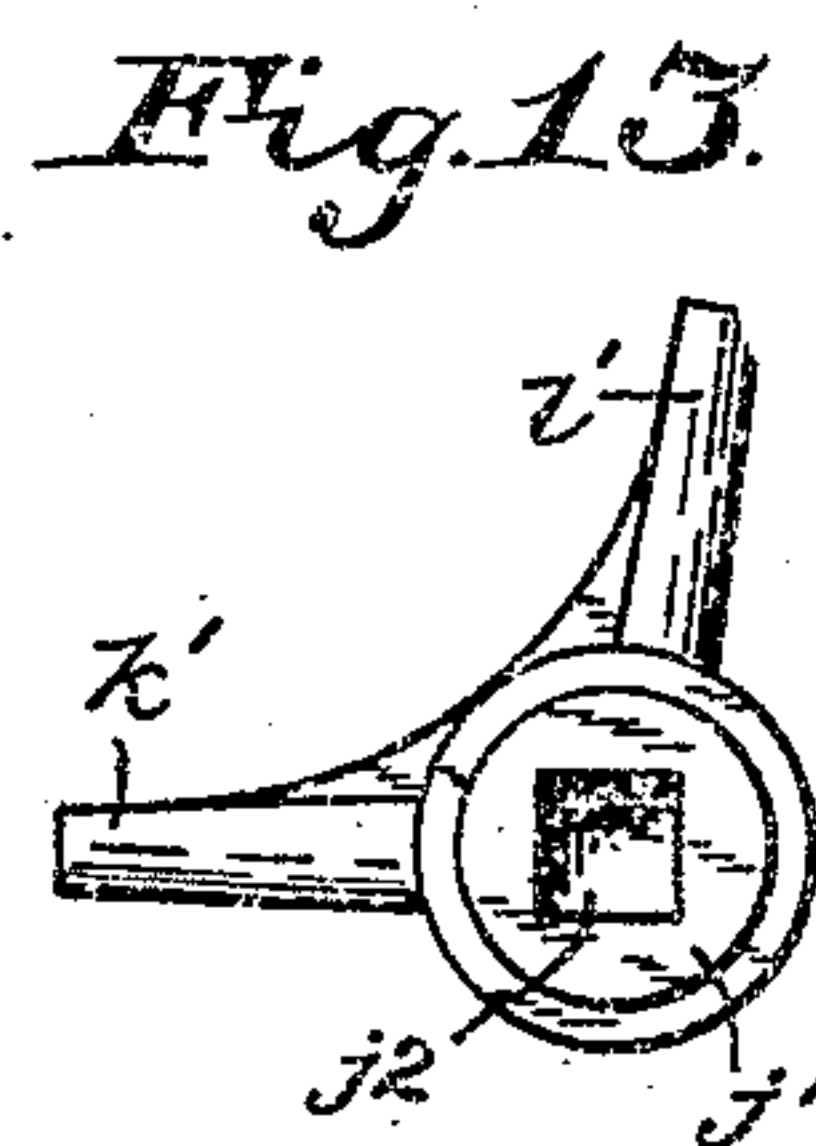
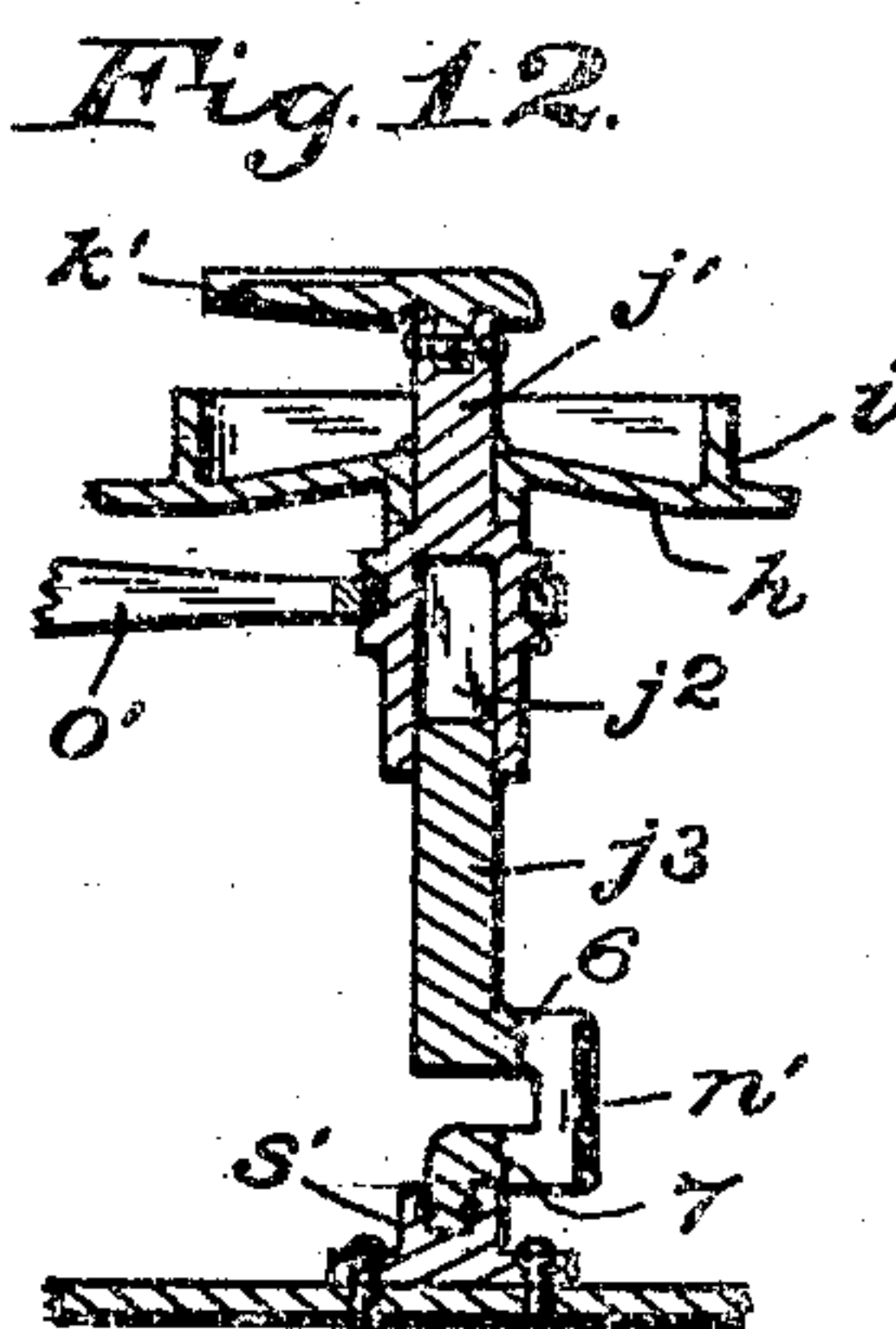
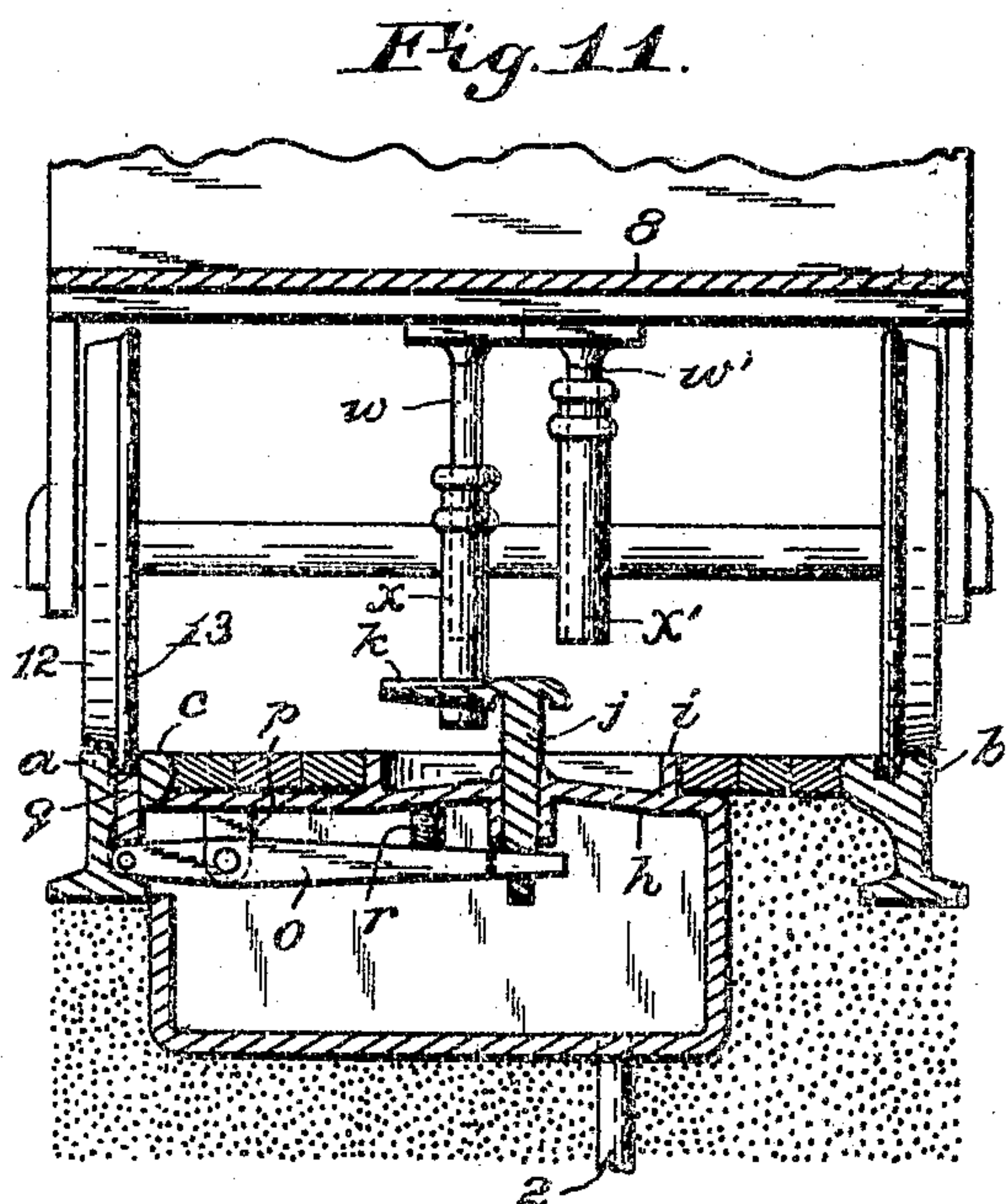
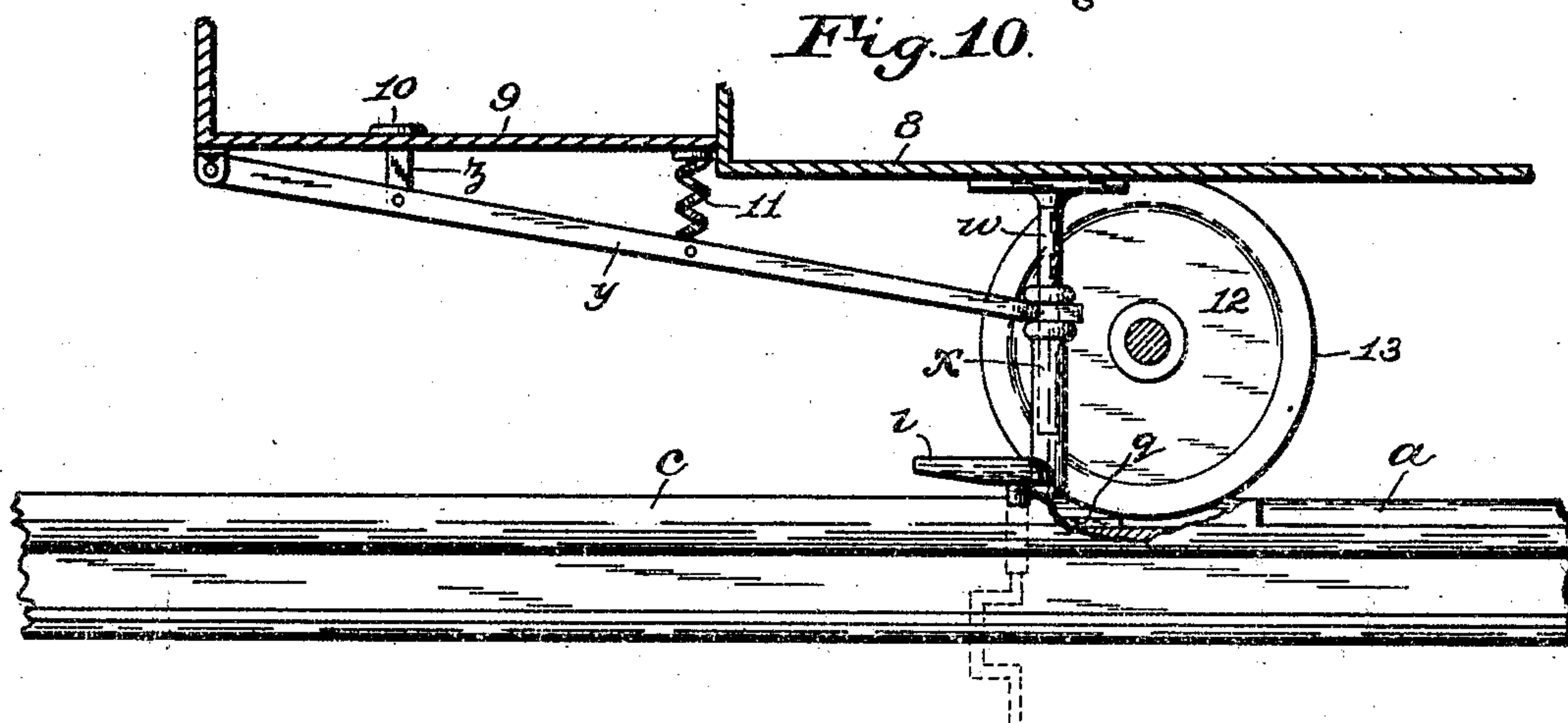
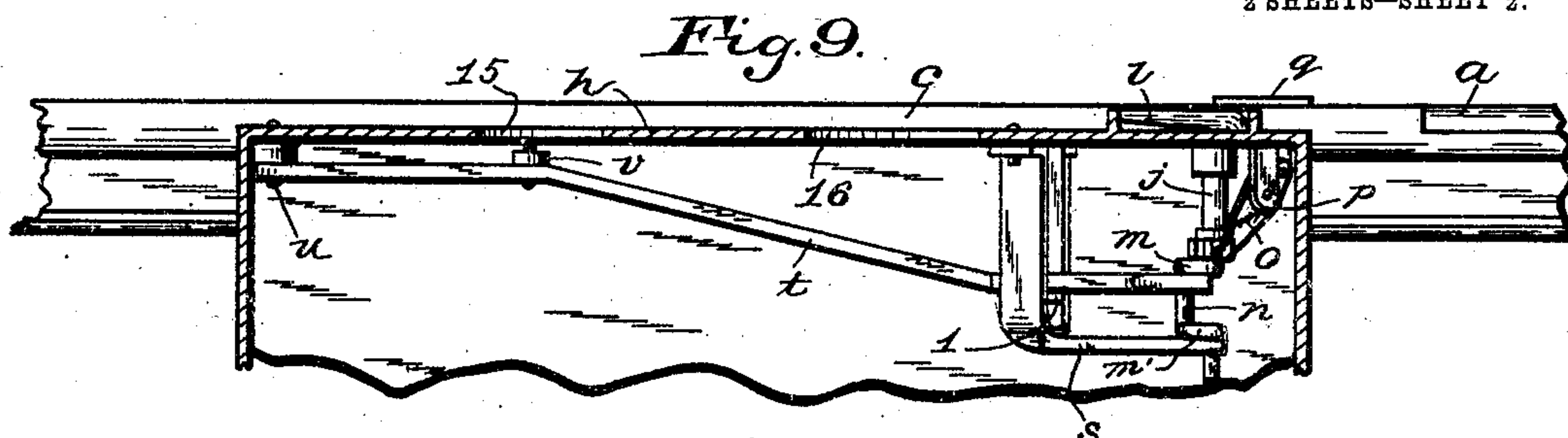
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Witnesses.

E. Gellertins.  
Stella Snider.

Inventor:

Lloyd C. Brown,  
by  
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# UNITED STATES PATENT OFFICE.

LLOYD C. BROWN, OF WICHITA, KANSAS, ASSIGNOR OF THREE-EIGHTHS TO AMBROSE D. BLANTON AND THREE-EIGHTHS TO LLEWELLYN H. BLANTON, OF INDIANAPOLIS, INDIANA.

## AUTOMATIC RAILWAY-SWITCH ADJUSTER.

SPECIFICATION forming part of Letters Patent No. 788,186, dated April 25, 1905.

Application filed July 27, 1904 Serial No. 218,331.

*To all whom it may concern:*

Be it known that I, LLOYD C. BROWN, a citizen of the United States, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented new and useful Improvements in Automatic Railway-Switch Adjusters; and I do declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to apparatus whereby railway-switches may be automatically adjusted under control of an operator on a moving car when approaching the switches, the invention having reference particularly to devices that are designed to be operated by means of the car-wheels, to devices that are carried by the cars, and to devices connected with the switch points or tongues that are designed to be operated by the devices that are carried by the cars.

Objects of the invention are, first, to provide improved switch-adjusting appliances that will not ordinarily be obstructive on the ground-surface and which may have actuating parts that may be automatically elevated so as to be rendered accessible when required for operation of the switches, and, second, to improve switch-adjusting mechanism generally to the end that positive, expeditious, and economical operations of switches may be attained.

With the above-mentioned and other objects in view the invention consists of improved apparatus connected with a switch-point and provided with a vertically-movable device connected therewith and situated adjacently to one of the track-rails, so as to be depressed by the flanges of car-wheels, the apparatus including switch-levers adapted to be elevated to accessible positions by means of the vertically-movable device and the car-wheels, so as to be engaged by switch-operating apparatus carried by the cars.

The invention consists, further, in the novel parts and in the combinations and ar-

rangements of parts, as hereinafter particularly described, and pointed out in the appended claims.

Referring to the drawings, Figure 1 is a plan view of a part of a railway-track and a switch connected therewith, illustrating the application of the invention thereto; Fig. 2, a vertical transverse sectional view at the plane of the line A A in Fig. 1; Fig. 3, a top plan of a modified form and arrangement of switch-point and operating-arm therefor; Fig. 4, a perspective view of an inverted switch-point; Fig. 5, a fragmentary plan of the modified form of operating-arm for the switch-point shown in Fig. 3; Fig. 6, a perspective view of a bracket for supporting an end of the switch-lever crank; Fig. 7, an inverted plan of the modified form of switch-point; Fig. 8, an inverted plan view of the apparatus in its housing, which is in horizontal section; Fig. 9, a longitudinal vertical sectional view as at the plane of the line B B in Fig. 1; Fig. 10, a fragmentary diagrammatic sectional elevation showing portions of a car carrying parts of the apparatus and illustrating the manner of operating the switch-levers, the car being in central longitudinal section and the stationary and ground parts being viewed at the line B in Fig. 1; Fig. 11, a vertical transverse sectional view as at the line A A in Fig. 1 and transversely of a car shown in the act of cooperating with the operative parts that are located near the switch; Fig. 12, a vertical transverse sectional view of a modified form of switch-lever crank; Fig. 13, an inverted plan view of the upper part of the switch-levers shown in Fig. 12; Fig. 14, a top plan of part of the modified crank, and Fig. 15 is a perspective view thereof.

Similar reference characters in the several figures of the drawings designate like parts or features.

In the drawings the earth or foundations are omitted in Figs. 1, 8, 9, and 10 in order to avoid obscuring the important elements of the invention. The rail *a* (shown as being straight) may be curved, and the curved rail *a'* may be designed to form part of the straight



track, the rails  $b$  and  $b'$  being modified to conform to the others, the arrangement in Fig. 1 being rather for illustrative purposes than to set up arbitrary plans. A guard-rail  $c$  is arranged opposite the rail  $a$ , as is usual, and the switch-point  $d$  has a pivot  $e$  at its heel in the customary position with respect to the rails. In the preferred construction the point  $d$  is provided at the under side thereof with a stud  $f$ , having a pin-hole  $g$ , to serve in controlling the point.

The apparatus that is connected with the switch is mounted in a housing  $h$ , which may be made up of any suitable number of parts as may be found most expedient or desirable, and it is suitably supported in the ground between the track-rails. On the top of the housing is a ledge-like guard of semicircular form in plan, and the top of the guard is arranged in the plane of the top of the street-paving, while the remaining parts of the housing outside of the guard are to be covered with the paving, suitable covered manholes being provided for gaining access to the interior of the housing, uncovered manholes being shown in Figs. 1, 8, and 9 at 15 and 16.

A vertical rocking shaft  $j$  has secured thereto a crank-arm  $m$ , to which is attached a crank-pin  $n$ , having a crank-arm  $m'$  attached thereto, the whole comprising the switch-lever crank, a pair of horizontally-disposed switch-levers  $k$  and  $l$ , set nearly at right angles one to the other, being secured to the top of the shaft  $j$  above the top of the housing and surrounded by the guard  $i$ , the tops of the levers normally being at rest in the plane of the top of the guard, so as to offer no obstruction above the pavement-surface. In order to prevent water or dust from accumulating in the guard  $i$ , suitable drain-openings in the housing are provided, as at 14 in Fig. 1, and the dust or sand may be removed from the housing through the manholes. The shaft  $j$  is so mounted that it may move vertically in its bearings, and consequently elevate the levers  $k$  and  $l$ , secured thereto. A vertically-movable lever  $o$  is pivoted to a support  $p$ , that is secured to the housing, and one end of the lever is forked and engages the shaft  $j$ , so as to control its vertical movements while permitting rotation or rocking of the shaft, and the opposite end of the lever is connected to a presser-bar  $q$ , that is suitably mounted between the rail  $a$  and the guard-rail  $c$  somewhat in advance of the switch-point, the presser-bar normally standing with its top approximately in the plane of the top of the rail  $a$  and adapted to be depressed by the flanges of the car-wheels, and thereby elevate the levers  $k$  and  $l$ . A spring  $r$ , acting on the lever  $o$ , normally holds the levers  $k$  and  $l$  in their depressed positions, but may be dispensed with when the weights of the metal in the connections are properly distributed to accomplish the same results.

A suitable support  $s$  is attached to the housing and aids in supporting the switch-lever crank.

An arm  $t$  is horizontally disposed and is connected at one end thereof to a pivot  $u$ , supported by the housing near the pivot  $e$  of the switch-point, and a switch-rod  $v$  is pivoted to the arm and also to the stud  $f$  of the switch-point for the control of the latter by means of the arm, the free end of the arm being suitably supported, as by a guide 1, attached to the support  $s$ , and having a slot 3, in which the crank-pin  $n$  operates to move this end of the arm radially in a horizontal plane, so that the radial movements of the levers  $k$  and  $l$  will cause the switch-point  $d$  to shift its position. A drain-pipe 2 is connected to the bottom of the housing to prevent water from accumulating and freezing therein. The crank-pin  $n$ , it will be observed, has sufficient length so as to move vertically in the slot 3 without elevating and depressing the end of the arm  $t$ .

In some cases in lieu of the stud  $f$ , the pivot  $u$ , and the rod  $v$  for connecting and operating the switch-point a point  $d'$  may be employed, to which is secured a pivot  $e'$  for its support and control, the pivot having a squared end 5 inserted in a square hole 4 in the end of the arm  $t'$ , thus providing a pivot both for the switch-point and its arm, the latter having the slot 3 in its free end and being operated in the same manner as the arm  $t$ . In some cases also the switch-lever crank may be composed of two parts formed separately, comprising a shaft  $j'$ , having the levers  $k'$  and  $l'$  secured to the top thereof and in the lower end thereof having a square socket  $j^2$ , in which is slidably connected the square upper portion of a shaft  $j^3$ , to which is secured the crank-arm 6, carrying the crank-pin  $n'$ , to which is attached the crank-arm 7, supported in a bearing-box  $s'$ . The lever  $o'$  is like the lever  $o$  and coöperates in like manner with the shaft  $j'$  to elevate and depress the levers  $k'$  and  $l'$ , the shaft  $j'$  being supported by the housing  $h$ , so as to move rotatively and also vertically, while the shaft  $j^3$  may move only rotatively. The crank-pin  $n'$  is only long enough to extend through the slot 3 in the arm  $t'$ .

In Figs. 10 and 11 the car-body is designated by 8, and the front platform by 9. A pair of vertical circular shafts  $w$  and  $w'$  are supported by the body of the car, one at either side of the longitudinal center of the car, and obviously the shafts may be supported by a car-truck, if most convenient, in either case the shafts being near the front of the forward axle of the car. On one shaft is a long roller  $x$  and on the other a similar roller  $x'$ , the rollers being adapted to be depressed on their shafts. For controlling the rollers each one is provided with a lever  $y$ , that is pivoted at one end thereof to the car-



platform and connected at its opposite end to the roller, so that the roller may be free to rotate. A push-bar  $z$  is connected to the lever  $y$  and extends through the car-platform 9 and is provided with a foot-plate 10, a spring 11, connected to the lever  $y$  and supported by the platform or otherwise normally holding the roller in elevated position.

It will be understood that the various elements and also minor details not particularly described may be variously designed, as mechanical experience may dictate.

In practical use when a car approaches the point of a switch that may require readjustment the proper roller  $x$  or  $x'$  should be depressed before it arrives at the switch-levers  $k$  and  $l$ , (or  $k'$  and  $l'$ ), and when the flange 13 of the wheel 12 engages the presser-bar  $q$  the latter will be depressed and the switch-levers will be elevated, so that the proper one thereof may be engaged and operated by the depressed roller, the roller  $x$  being the proper one to be depressed when the lever  $k$  extends transversely of the track. After the lever may have been moved so as to extend longitudinally of the track, so as to shift the switch-point, the wheel-flange will have passed over the bar  $q$ , permitting the lever to descend to its normal position, and then the roller should be permitted to ascend to its normal position. When cars pass in the opposite direction and move the switch-point by means of the wheel-flanges, the mechanism connected with the point and also the presser-bar  $q$  will be moved idly, as will be obvious.

Having thus described the invention, what I claim as new is—

1. A railway-switch provided with an operating-arm cooperating to shift the switch-point of the switch, a vertically-movable switch-operating device cooperating with the operating-arm to shift the switch-point and including a normally depressed horizontal operating-lever, a normally elevated vertically-movable device, and means connected to the vertically-movable device cooperating to elevate the horizontal operating-lever.

2. A railway-switch provided with a pivoted horizontally-movable operating-arm cooperating to shift the switch-point of the switch, a vertically-movable switch-operating lever cooperating with the operating-arm, a pivoted lever cooperating to elevate the switch-operating lever, and a vertically-movable device connected to the pivoted lever cooperating therewith to elevate the switch-operating lever.

3. A railway-switch adjuster including a movable switch-point, a housing, an operating-arm cooperating to shift the switch-point, a depressed switch-operating lever cooperating with the operating-arm, a pivoted lever cooperating with the switch-operating lever, a guard attached to the housing for the switch-operating lever, and a depressible de-

vice connected to the pivoted lever cooperating to elevate the switch-operating lever.

4. A railway-switch provided with an operating-arm cooperating to shift the switch-point, a vertical shaft mounted so as to move rotatively and provided with a pair of operating-levers adapted to be elevated, mechanism operatively connecting the vertical shaft with the operating-arm, a pivoted lever cooperating to elevate the pair of operating-levers, and a vertically-movable device connected to the pivoted lever cooperating therewith to elevate the pair of operating-levers.

5. Automatic switch-adjusting apparatus including a movable switch-point, a pivoted arm cooperating to shift the switch-point, a vertically-movable switch-operating device cooperating with the pivoted arm to shift the switch-point and normally situated in a depressed position, a vertically-adjustable device adapted to operate the operating device mounted on a car or similar vehicle, and a movable device adapted to be depressed cooperating to elevate the switch-operating device to the path of the adjustable device and automatically depressed by a wheel of the car or vehicle.

6. The combination with a railway-rail and a switch-point operating therewith, of a presser-bar movably mounted at a side of the rail and having its top approximately in the plane of the top of the rail, a pivoted lever connected to the presser-bar, a rotative crank-shaft movable vertically and controlled by the pivoted lever, a pair of switch-levers secured to the rotative crank-shaft, and means cooperating with the crank-shaft and operatively connected with and controlling the switch-point.

7. The combination with a railway-rail and a switch-point operating therewith, of a housing, a presser-bar movably mounted at a side of the rail, a pivoted lever connected to the presser-bar, a rotative crank-shaft mounted in the housing, a pair of switch-operating levers mounted on the crank-shaft and adapted to be elevated by the pivoted lever, a guard attached to the housing and extending about the switch-operating levers, and means cooperating with the crank-shaft and operatively connected with and controlling the switch-point.

8. The combination with a railway-rail and a switch-point operating therewith, of a housing, a presser-bar movably mounted at a side of the rail, a lever connected to the presser-bar and pivotally supported by the housing, a rotative crank-shaft mounted in the housing, a pair of switch-operating levers mounted on the crank-shaft and operatively connected with the lever so as to be elevated thereby, a guard for the operating-levers, a pivoted arm cooperating with the crank-shaft, and means connected with the pivoted arm and also with the switch-point cooperating



ing to shift the switch-point and to control the position thereof.

9. The combination with a railway-rail and a switch-point in operative connection  
5 therewith, of a housing, a rotative shaft mounted vertically in the housing and provided with a vertically-adjustable switch-operating device at the top thereof, means  
10 coöperating with the rotative shaft and operatively connected with and controlling the switch-point, and controlling means for the switch-operating device coöperating to adjust the positions thereof in different vertical planes.

15 10. In automatic switch-adjusting apparatus, the combination of a movable switch-point, a housing, an arm pivoted at one end thereof and having a slot in the opposite end thereof, positive connections between the

arm and the switch-point coöperating to control and readjust the switch-point, a rotative crank-shaft mounted in the housing and co-operating with the arm in the slot thereof, a pair of switch-operating levers mounted on the rotative shaft so as to be elevated, a lever  
25 pivoted in the housing and coöperating to elevate and depress the pair of levers, a presser-bar connected to the lever, means for automatically depressing the presser-bar, automatic means for elevating the presser-  
30 bar, and movable means for engaging and operating the switch-operating levers.

In testimony whereof I affix my signature in presence of two witnesses.

LLOYD C. BROWN.

Witnesses:

WM. H. PAYNE,  
E. T. SILVIUS.