

(No Model.)

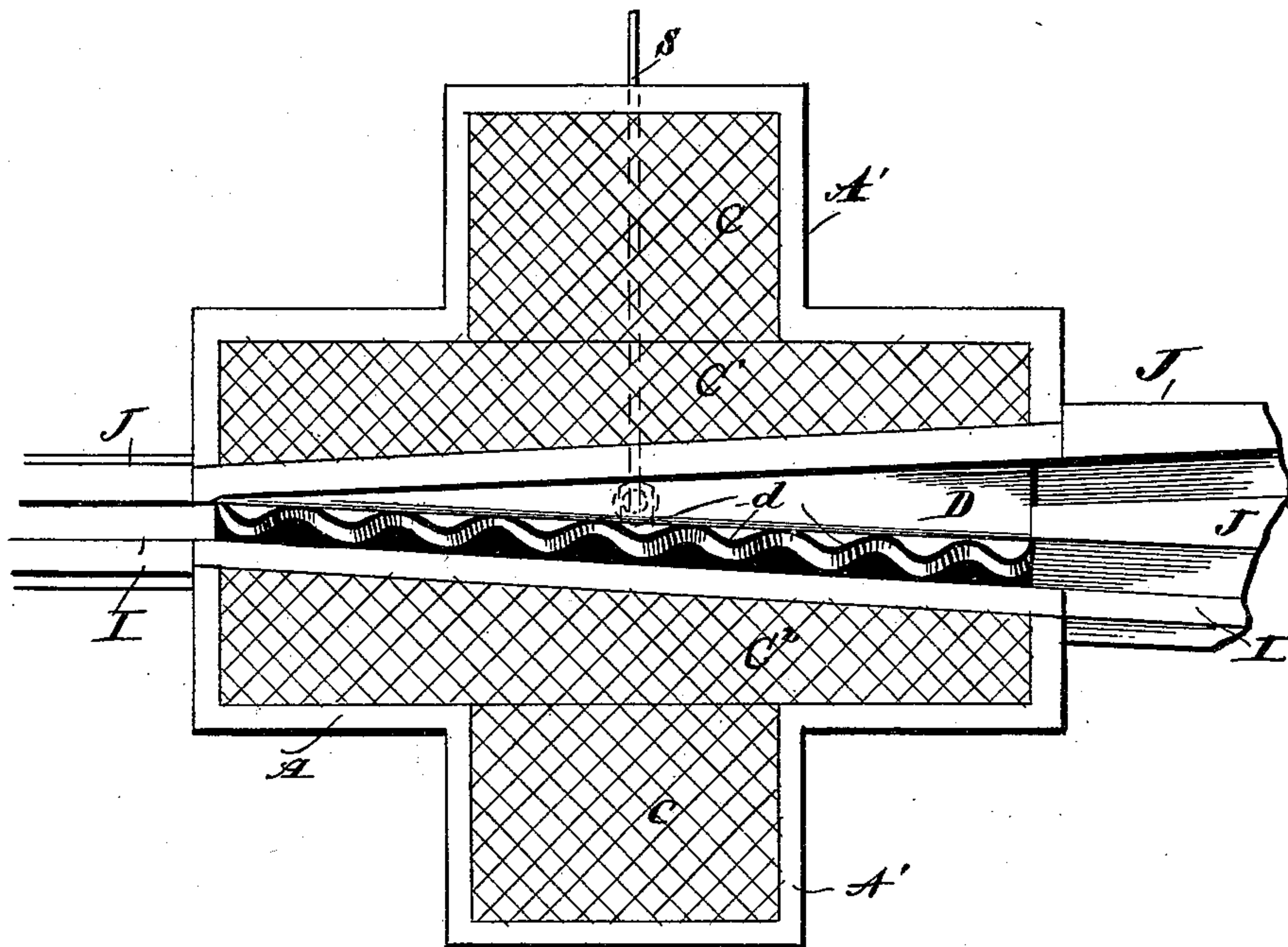
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J. Y. PORTER.  
RAILWAY SWITCH.

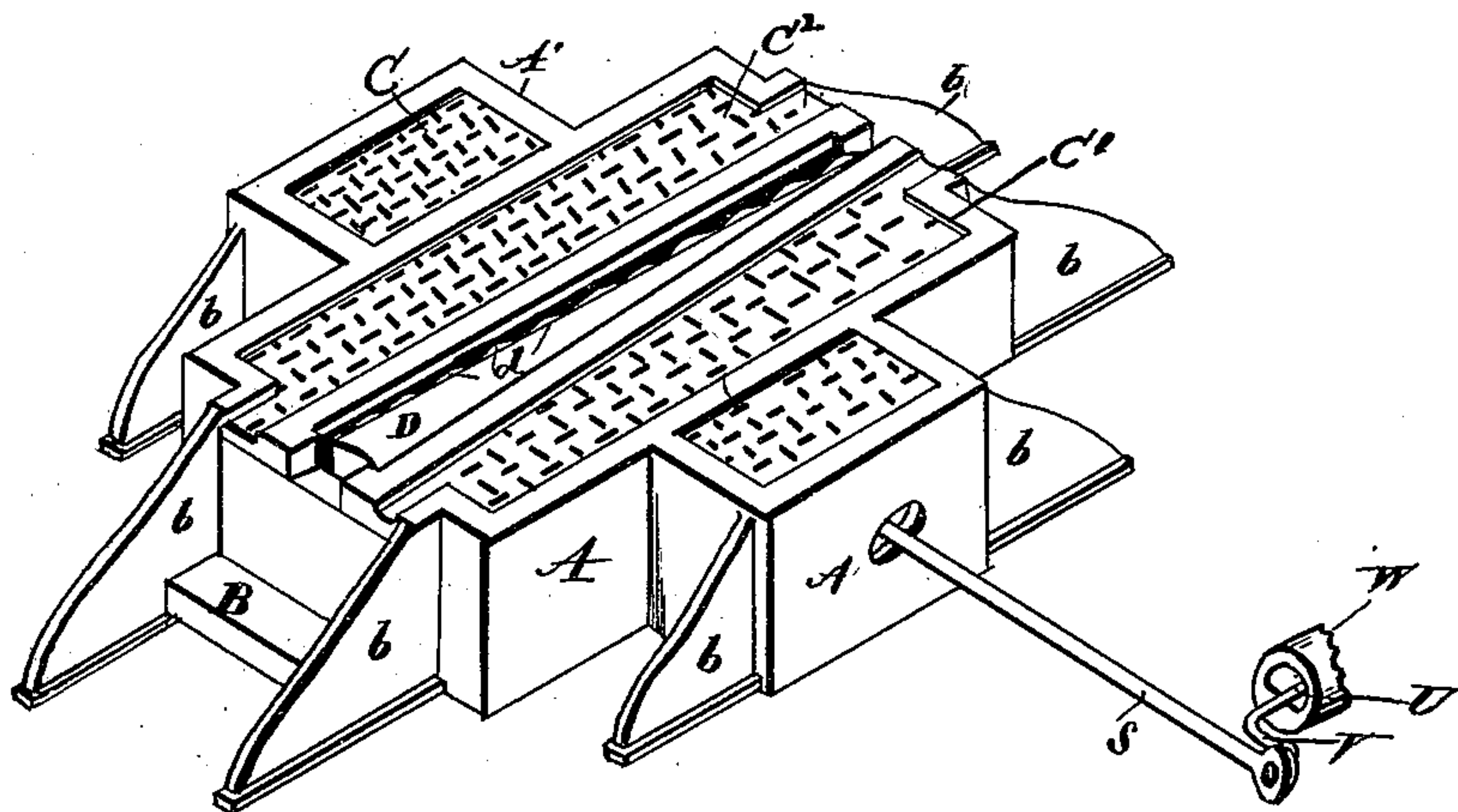
No. 556,323.

Patented Mar. 10, 1896.

*Fig. 1,*



*Fig. 2,*



Witnesses  
William H. Reynolds,  
W. J. Garrow

Inventor  
Joseph Y. Porter  
by Wm M. Mower  
Attorney

(No Model.)

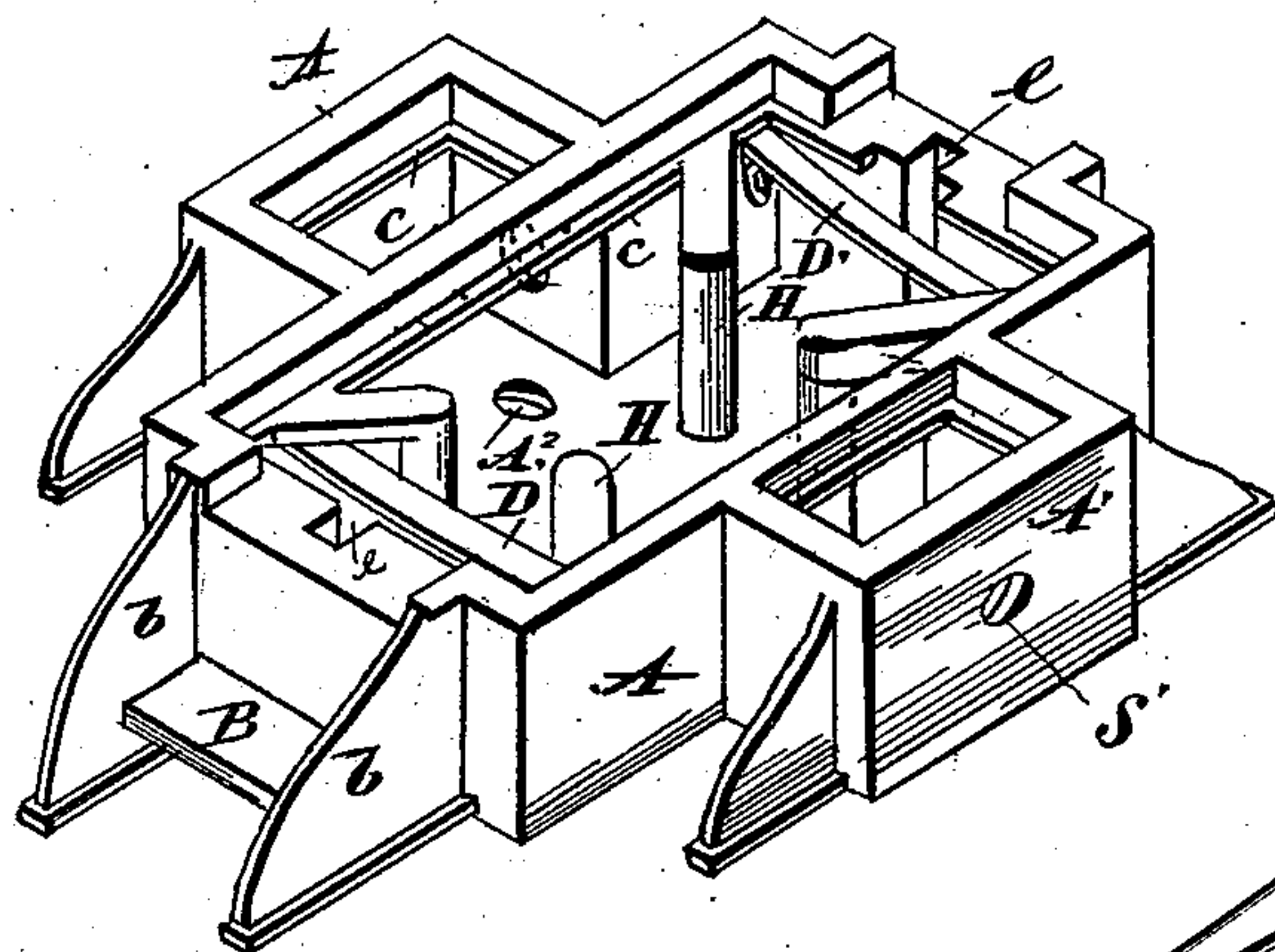
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J. Y. PORTER.  
RAILWAY SWITCH.

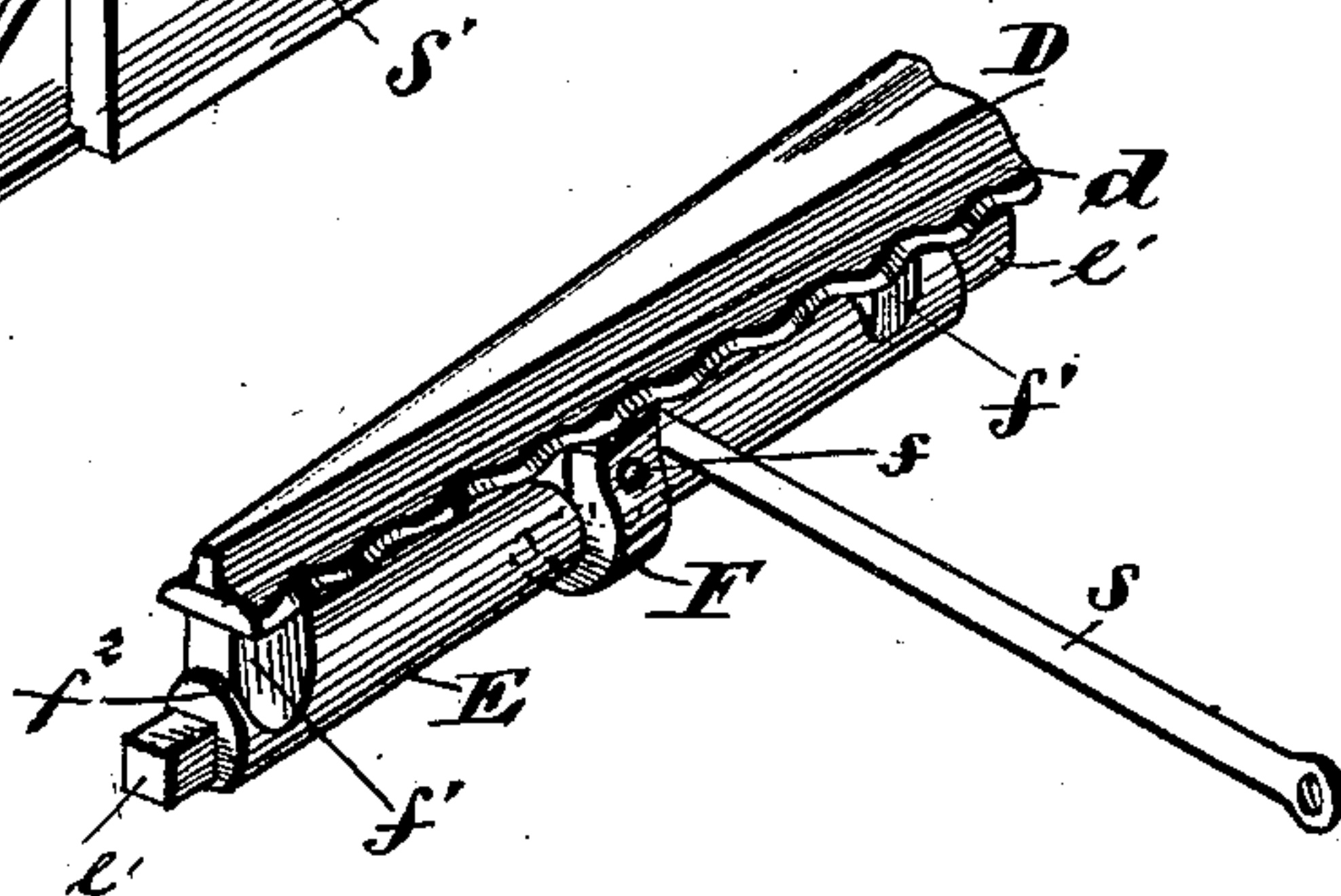
No. 556,323.

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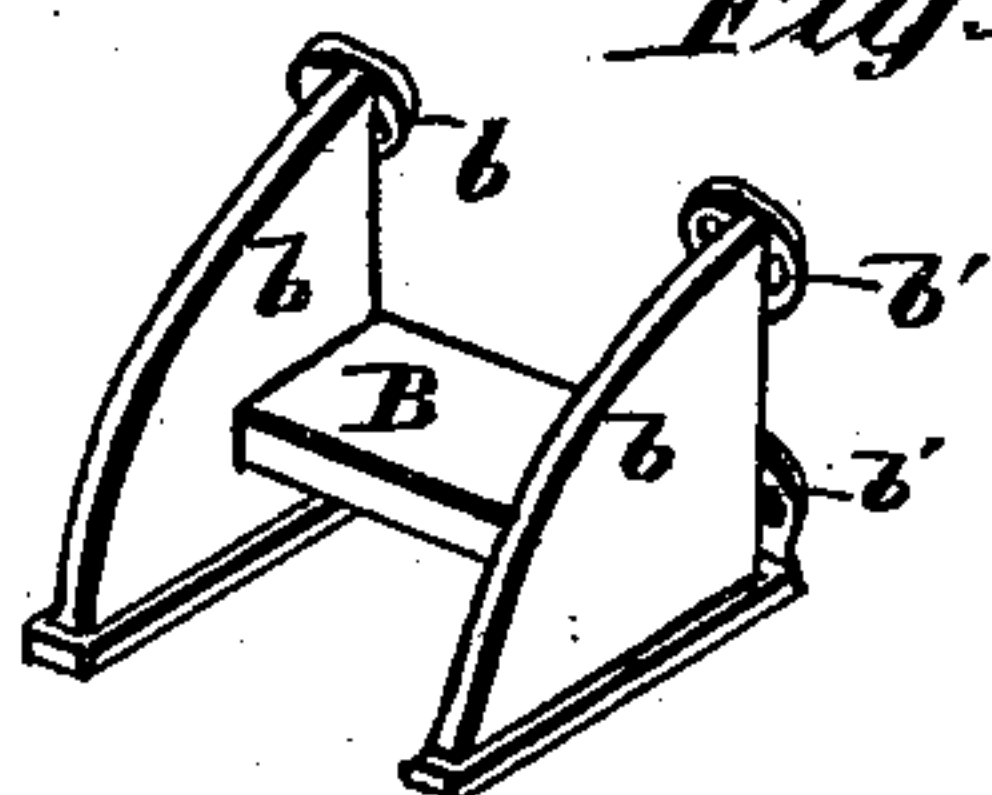
*Fig. 3.*



*Fig. 4.*



*Fig. 19.*



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*William M. Reynolds*  
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*J. Y. Porter*  
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(No Model.)

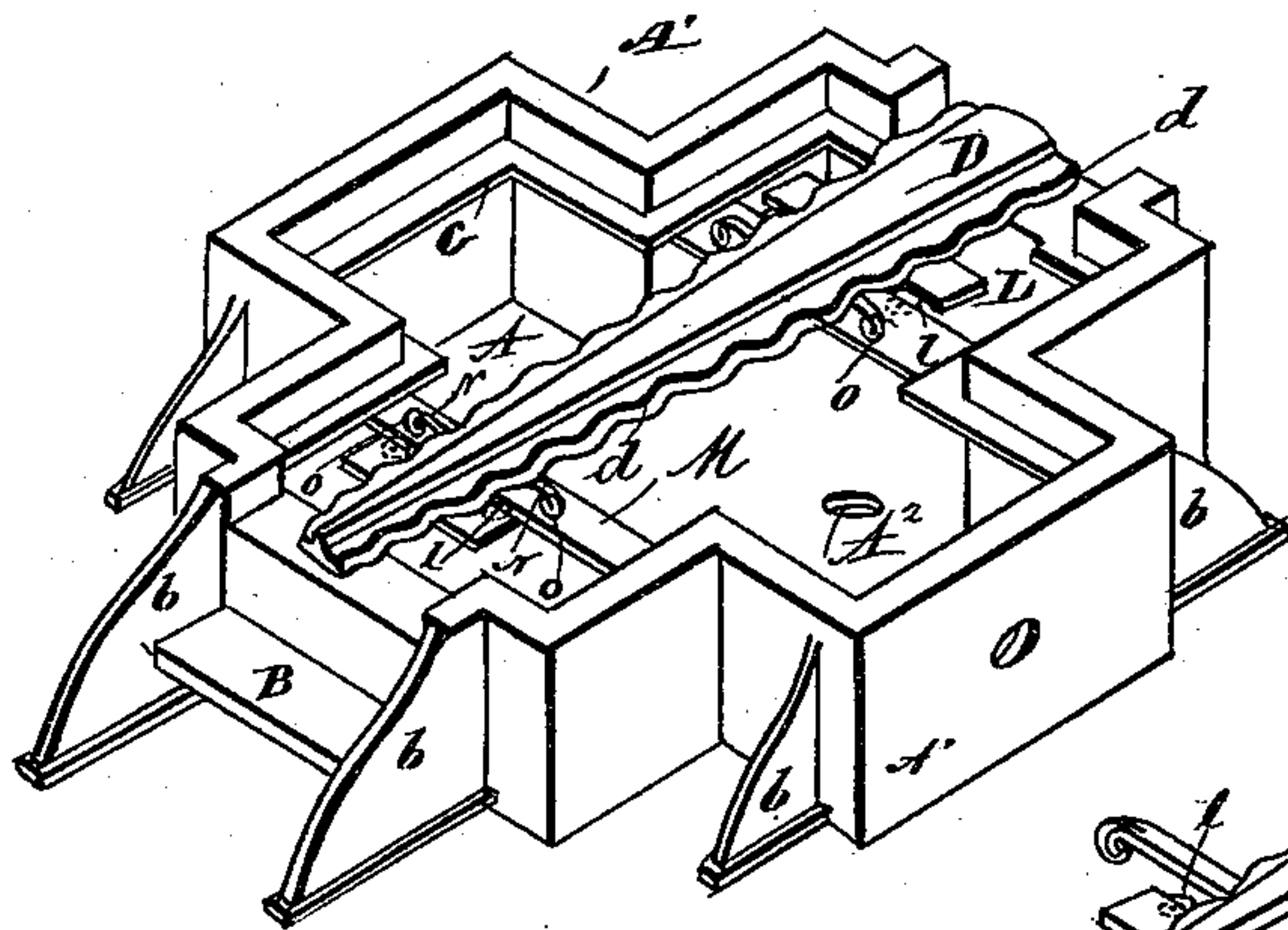
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J. Y. PORTER.  
RAILWAY SWITCH.

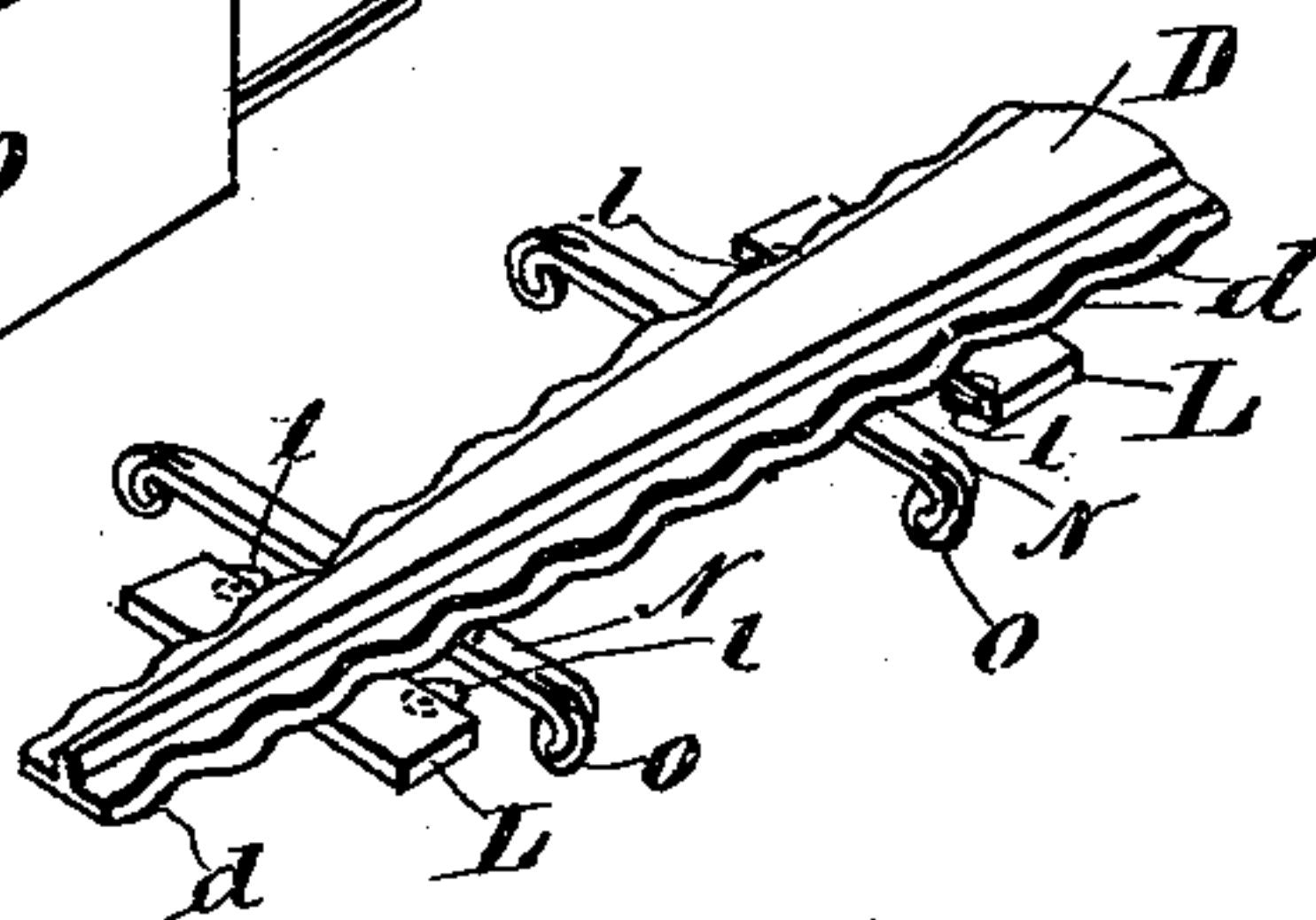
No. 556,323.

Patented Mar. 10, 1896.

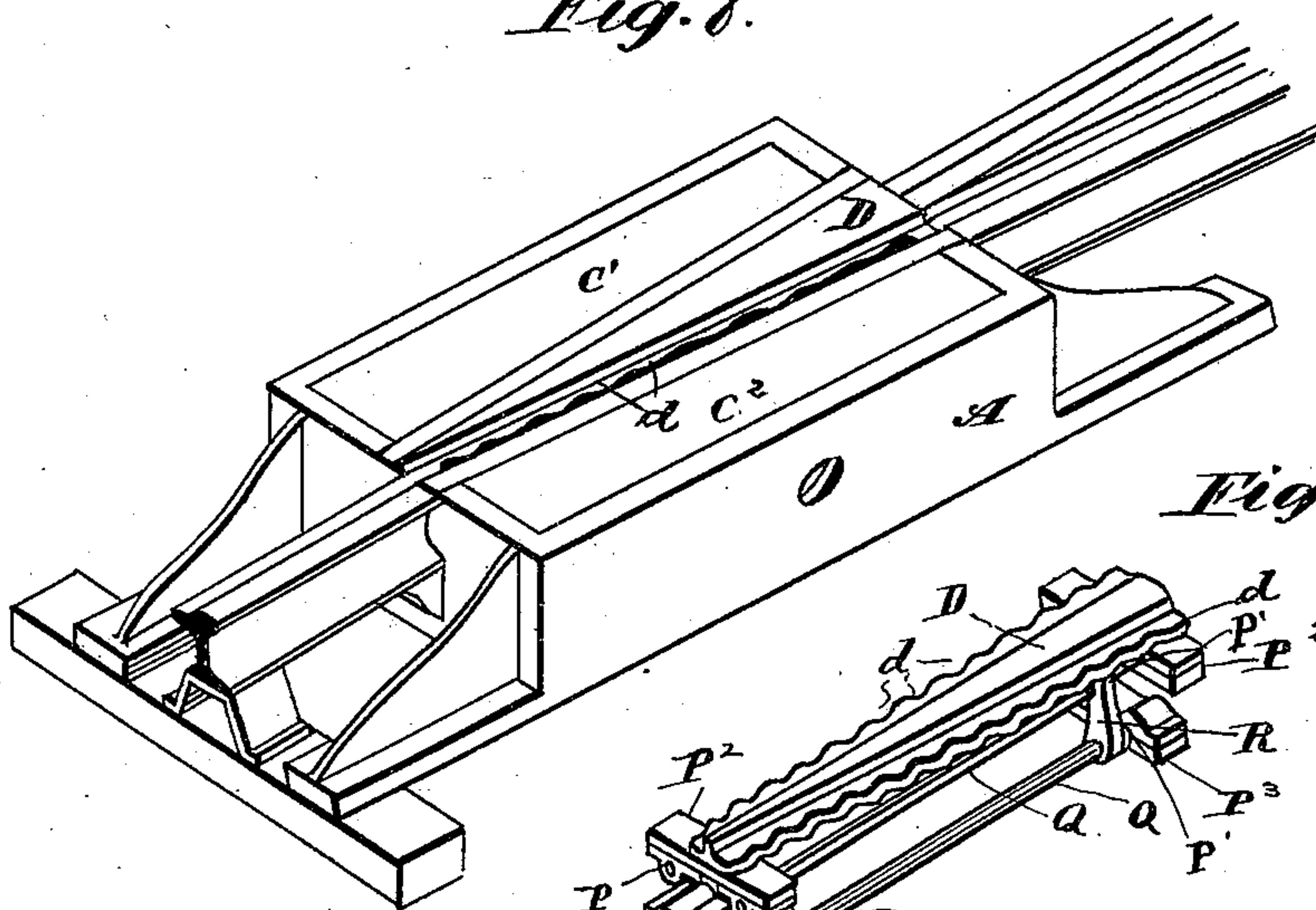
*Fig. 6.*



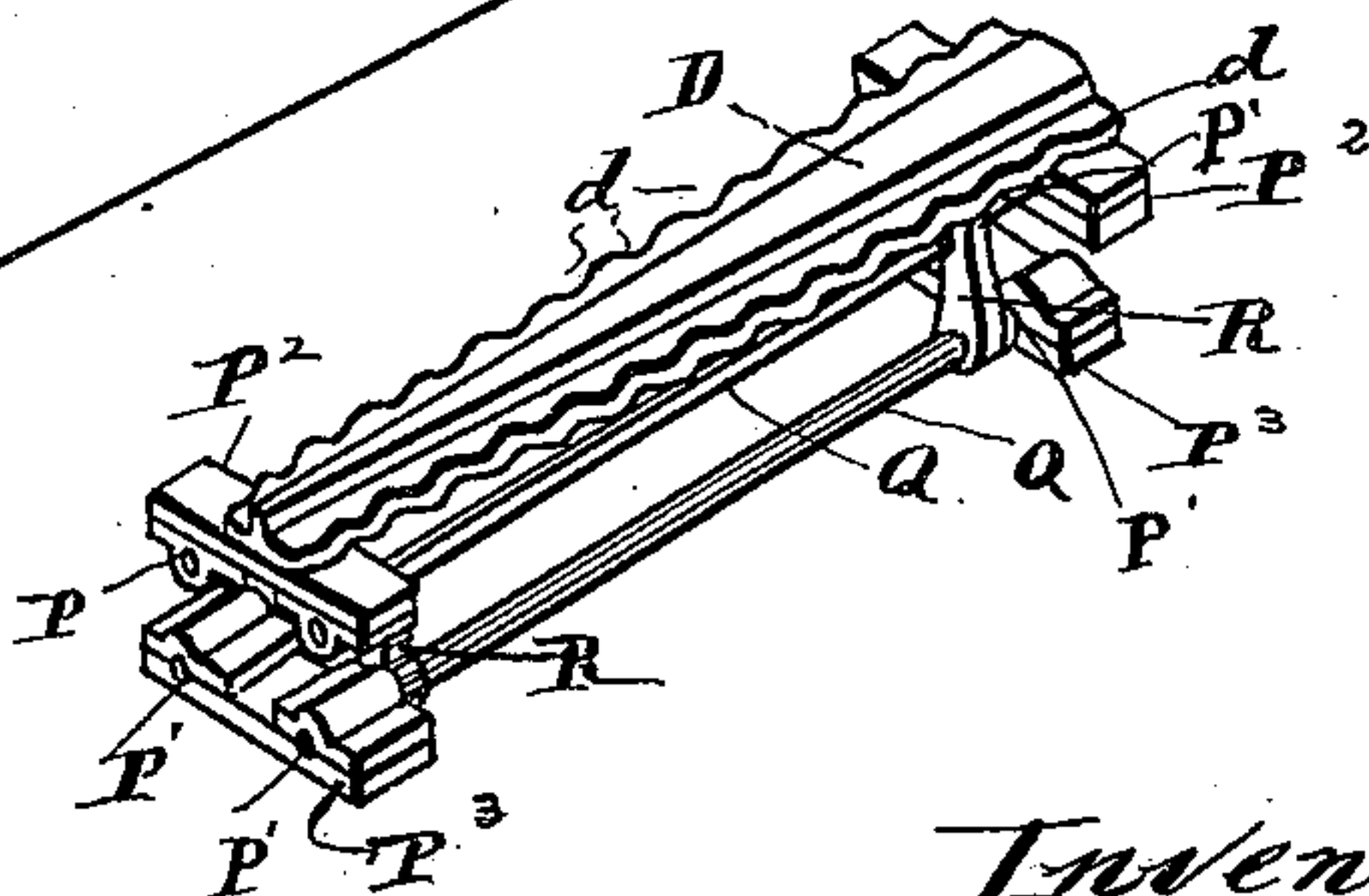
*Fig. 7.*



*Fig. 8.*



*Fig. 9.*



*Witnesses.*

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(No Model.)

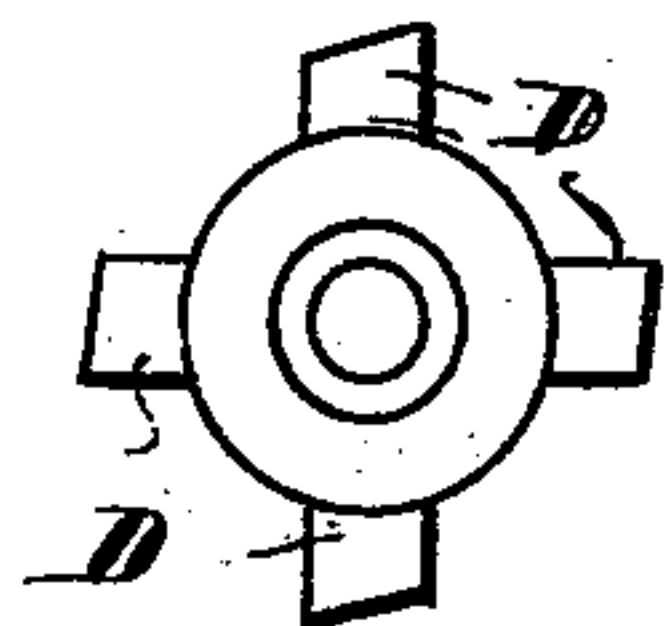
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J. Y. PORTER.  
RAILWAY SWITCH.

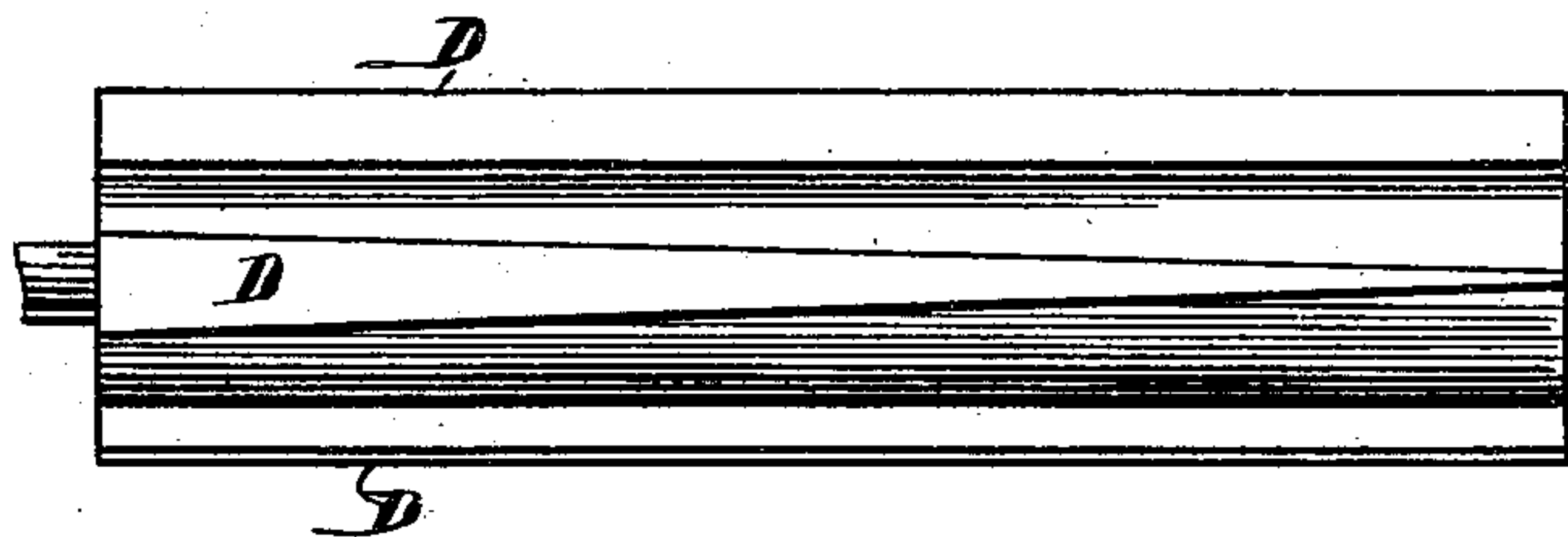
No. 556,323.

Patented Mar. 10, 1896.

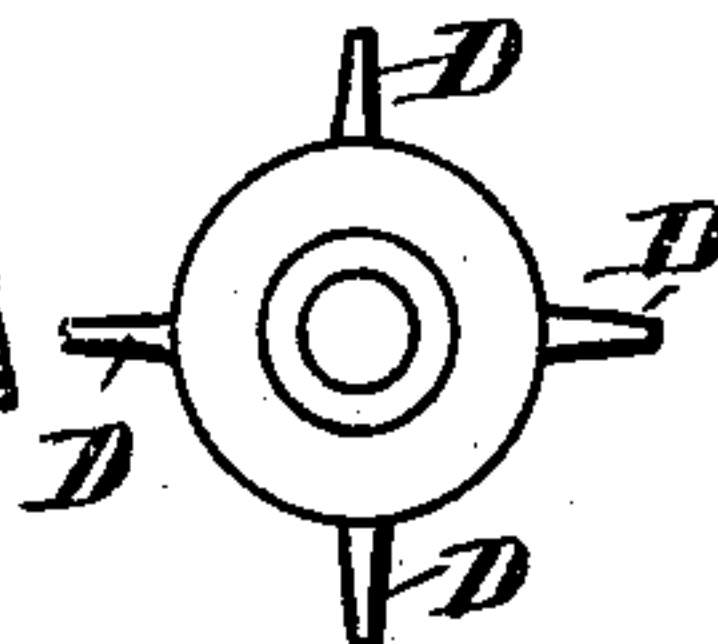
*Fig. 13.*



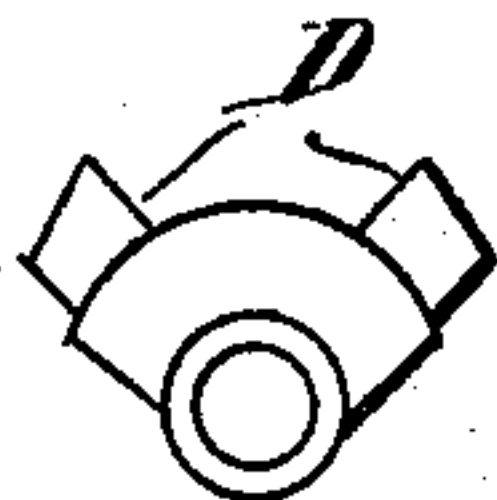
*Fig. 10.*



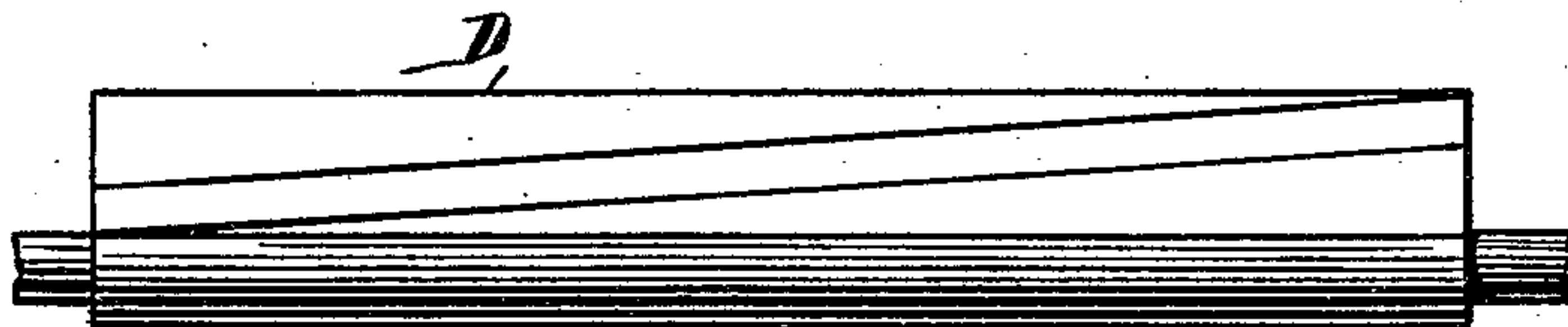
*Fig. 14.*



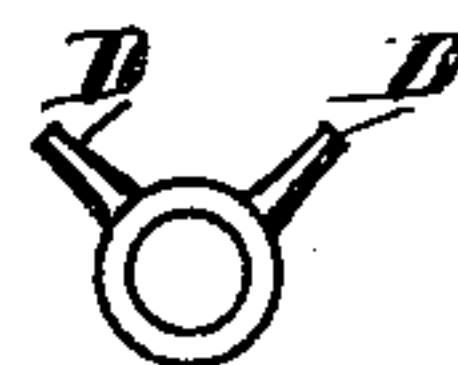
*Fig. 15.*



*Fig. 11.*

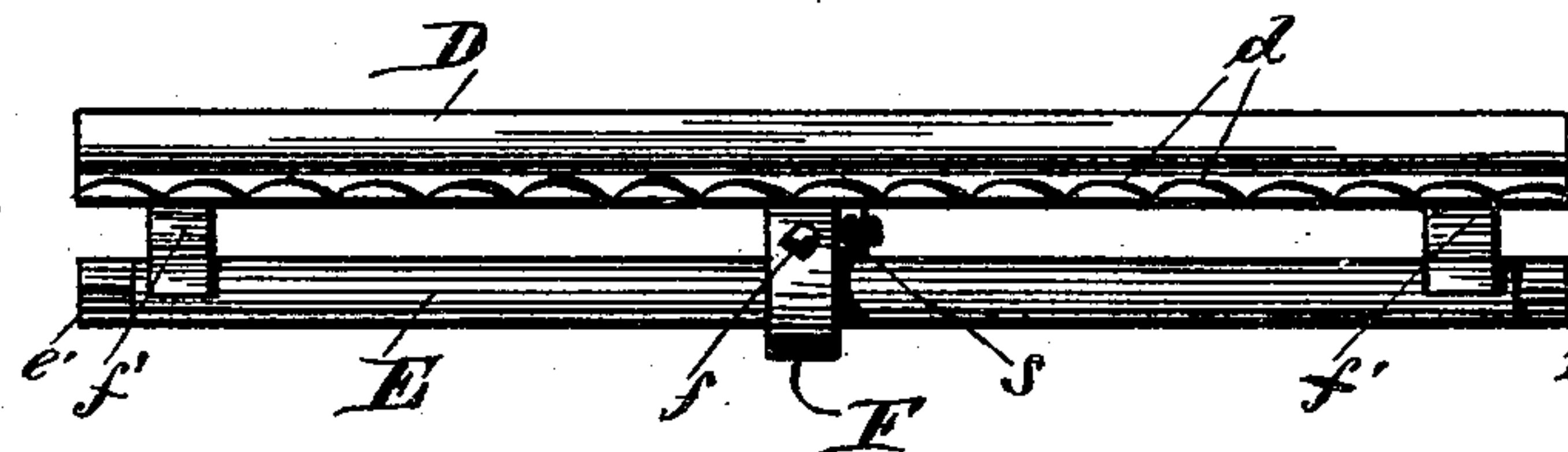
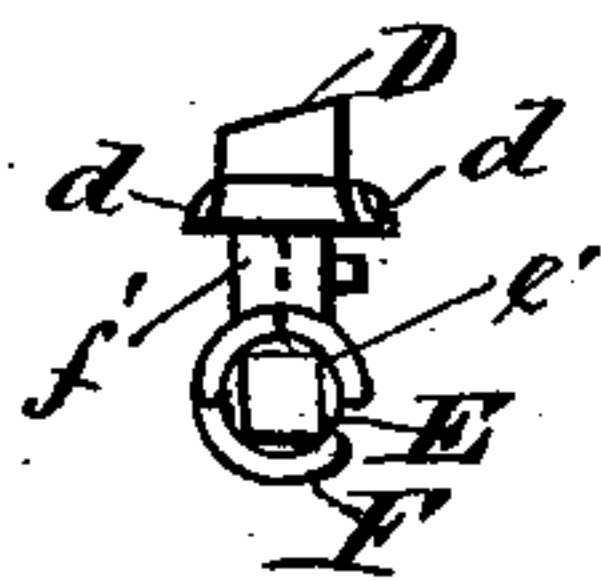


*Fig. 16.*

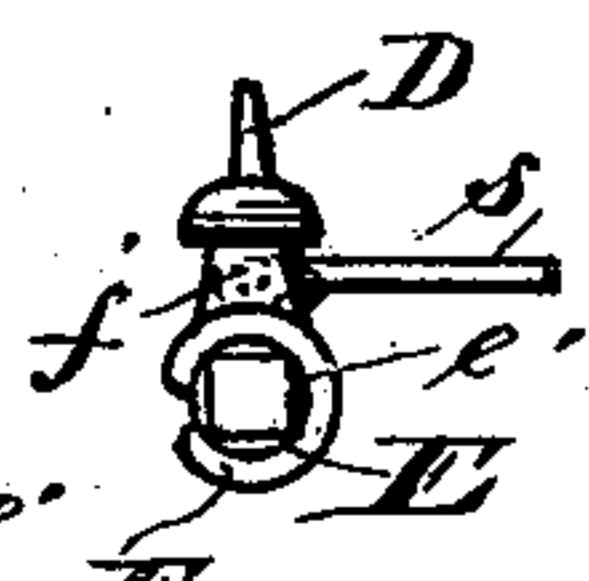


*Fig. 12.*

*Fig. 17.*



*Fig. 18.*



Witnesses  
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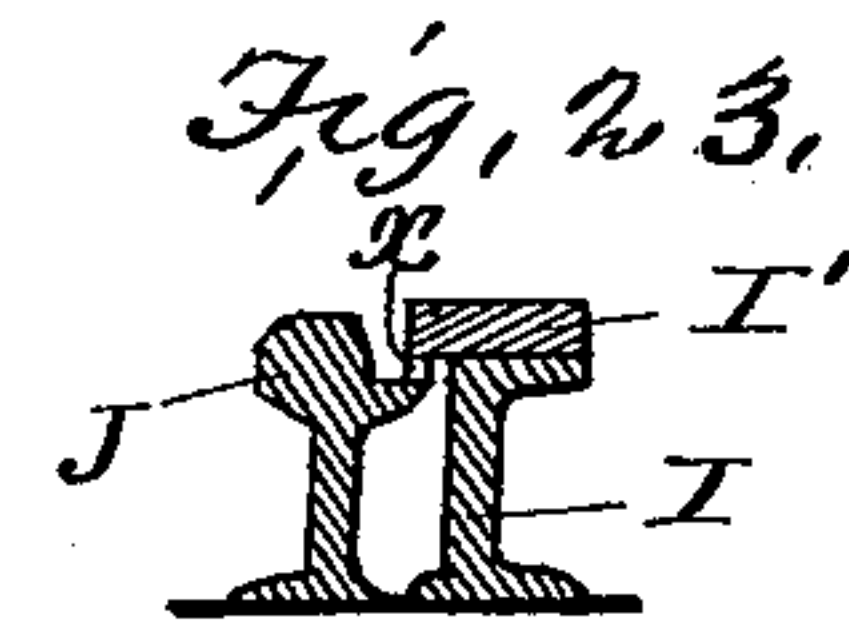
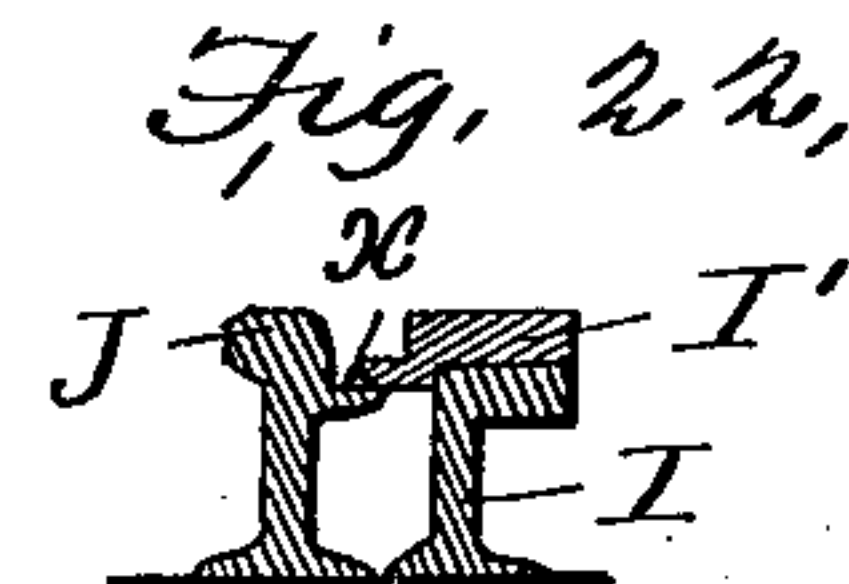
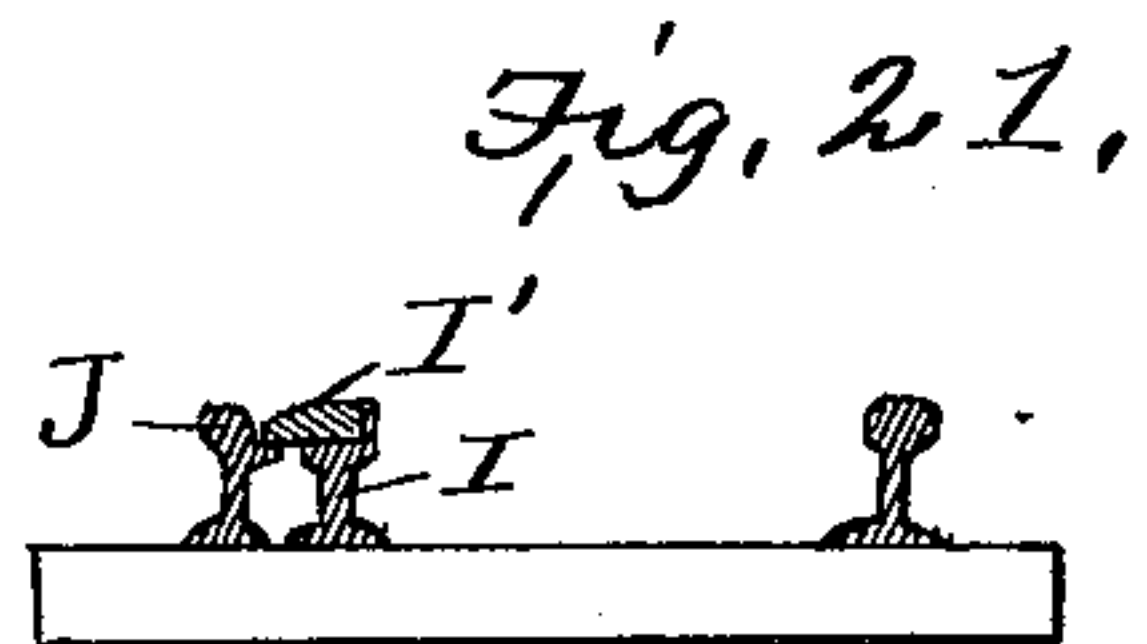
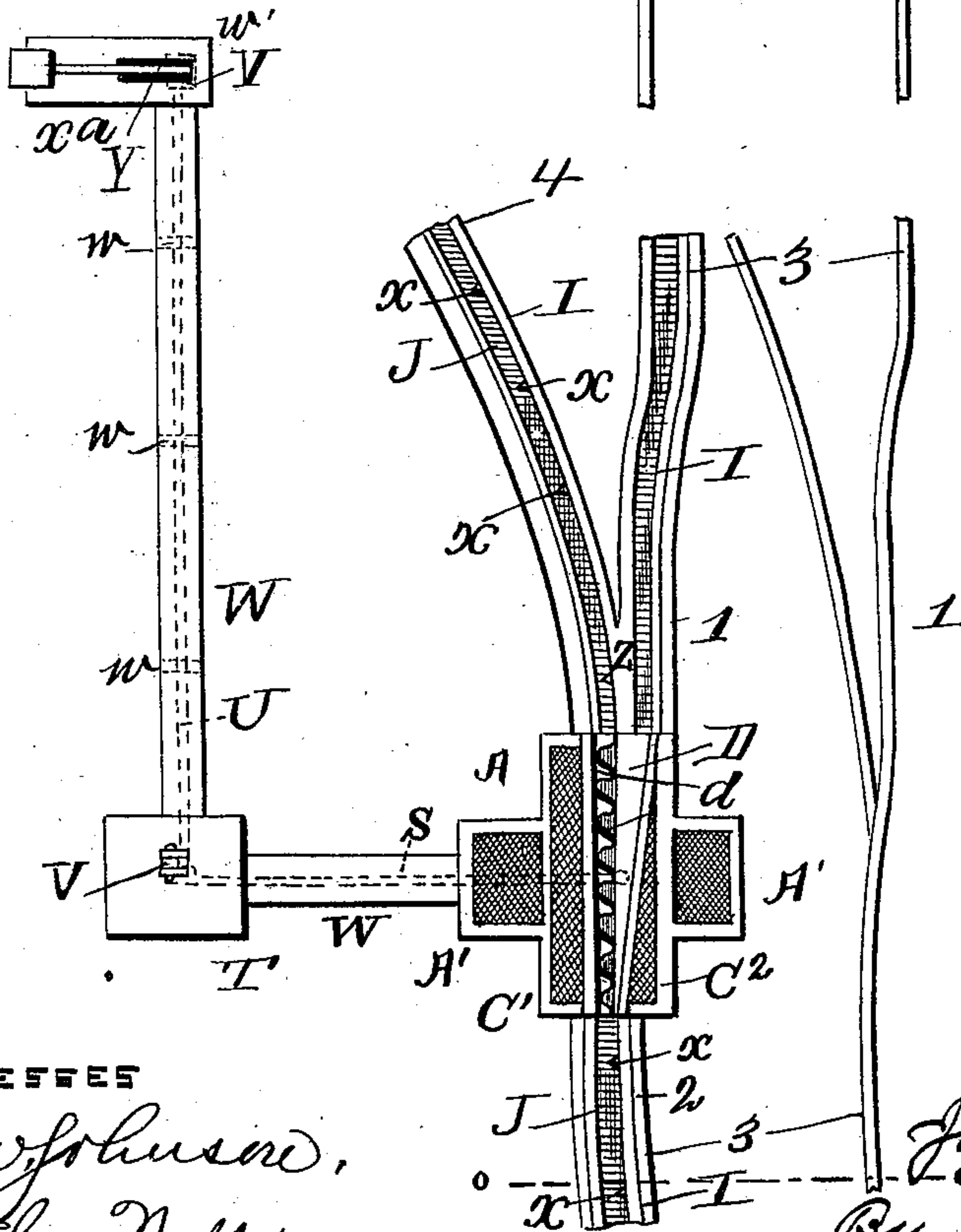
5 Sheets—Sheet 5.

J. Y. PORTER.  
RAILWAY SWITCH.

No. 556,323.

Patented Mar. 10, 1896.

Fig. 20.



WITNESSES

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*E. L. Wells.*

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# UNITED STATES PATENT OFFICE.

JOSEPH Y. PORTER, OF CLEVELAND, OHIO.

## RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 556,323, dated March 10, 1896.

Application filed April 28, 1893. Renewed December 21, 1895. Serial No. 572,935. (No model.) Patented in Canada January 28, 1893, No. 41,773.

*To all whom it may concern:*

Be it known that I, JOSEPH Y. PORTER, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Railway-Switches and Supports Therefor, (for which I have obtained a patent in Canada, No. 41,773, dated January 28, 1893,) of which I hereby declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to certain improvements in railway-switches and supports therefor; and its objects are to produce a form of switch that will free itself of dirt and water; that will be adapted to all degrees of curvature, either right or left; that will provide means for solid-connecting support for the adjacent rails, and in which the switch-point and tread-bearing plates may be removed and replaced without disturbing the pavement, and the switch-point operated from a point outside of the rails comprising the track.

The invention is particularly designed for street-railways; and it consists essentially in mounting the switch-point upon a shaft in such a manner that it can be readily and quickly removed.

It further consists in providing a suitable box supporting the switch with firm supports for the cover-plates and the adjacent ends of the rails; and it further consists in the novel construction of the various parts and their combination and arrangement, as will be hereinafter more fully described, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 represents a plan view of the switch and its supporting-box; Fig. 2, a perspective view of the same, looking from the opposite side; Fig. 3, a similar view with the cover-plates removed to show the switch-point supports; Fig. 4, a perspective view of the switch-point; Fig. 5, a detail view of one of the springs situated between the switch-point plate and bearings upon which the point is mounted; Fig. 6, a perspective view of a modified form of switch-box with the cover-plates removed, showing the switch-point mounted in place;

Fig. 7, a perspective view of a modified form of switch-point and accompanying mechanism; Fig. 8, a further modification of the switch-box; Fig. 9, another modification of the switch-point and accompanying mechanism. Figs. 10, 11, and 12 represent other modified forms of switch-points; Figs. 13 and 14, views of the respective ends of Fig. 10; Figs. 15 and 16, views of the respective ends of Fig. 11; Figs. 17 and 18, views of the respective ends of Fig. 12; Fig. 19, a perspective view of a detachable rail seat or platform; Fig. 20, a plan view of a portion of a main and side track, showing my improved switch in operative position, and a mechanism for operating the same; Fig. 21, a transverse section of the track on line *o o*, Fig. 20; and Figs. 22 and 23, enlarged transverse sectional views of rail and guard-rail.

Referring to the drawings, the numeral 3 indicates the main track, and 4 the side track, one side of each being provided with usual guard-rail I and tread-rail J, as shown in Figs. 20 and 21. The main-track and guard rails are constructed with curves or bends 1 and 2, which permit of a less curve to be given the siding, and tend to facilitate the approach of a car to the switch and its egress therefrom. As will be seen, the direction of the curve 2 of approach is toward the point marked Z on the heel of the switch, so that access to the switch is made easy, while access to the main track is not interfered with, and the curve 1 being a direct continuation of the tread of the switch egress from it is made much easier.

The letter A indicates the switch-box, which is preferably rectangular in shape, and provided with side extensions A' which open directly into the main or body portion of the box. The bottom or side of the box is provided with perforations A<sup>2</sup>, Fig. 3, for drainage purposes, and drain-pipes may be employed to conduct the water directly into a sewer. Each end of the switch-box is provided with a rail seat or platform B, upon which the ends of the track-rails rest and to which said ends are secured by means of braces *b*, which project from the main part and side extensions of the box. The inner walls of the main portion and side extensions



of the box are provided with flanges *c*, upon which are adapted to be seated the cover-plates *C C' C<sup>2</sup>*, the flange at the ends of the main portion of the box being cut away and  
 5 said ends of the box provided with bearings *e*, Fig. 3, to receive the respective journal ends *e'* of a shaft *E*, upon which is mounted a laterally-rockable switch-point *D*, and which is removably mounted upon the shaft *E*. (See  
 10 Fig. 4.)

The switch-point *D* is provided with a base-plate *d*, which is preferably formed integral with said point, and has its projecting side edges corrugated and its ends formed with  
 15 depending lugs or supports *f'*, which are hollowed out to conform to the curvature of the shaft *E* upon which they are mounted, to support the switch-point in such manner that by lateral rocking said point can be readily  
 20 shifted to open or close the main track to the passage of a car. A curved clamp *F*, detachably secured by a bolt *f*, serves to loosely attach the switch-point to the shaft *E* and hold it in operative position. The projecting cor-  
 25 rugated sides of the base-plate serve to prevent large substances from getting into the box, and at the same time offer a firm support for the wheels of passing vehicles, thereby preventing said wheels from being caught in  
 30 the opening between the switch-point and cover-plates.

At each end of the switch-box is a flat spring *D'* which passes between the base-plate of the switch-point and the shaft *E*, and has its re-  
 35 spective ends seated upon supports secured to the inner walls of said box. These springs serve to hold the switch in its position at either side of the box and protect it from sud-  
 40 den jar, which might have a tendency to displace it.

To prevent the cover-plates from being crushed in by heavily-loaded vehicles passing over them, I provide additional supports or brackets *H* which project from the side walls  
 45 of the switch-box toward its center, as shown in Fig. 3.

The switch being pivotally mounted in the box has a free laterally-rockable movement between the edges of the cover-plates *C'* and  
 50 *C<sup>2</sup>*. In Fig. 1 it will be seen that the switch and tread rails are set to carry the wheels of a car onto the straight or main track rails, giving a full tread from toe to heel; but if the switch be thrown over against cover-plate *C<sup>2</sup>*  
 55 the tread of the wheels would pass over the cover-plate *C'*, which becomes a portion of the switch-rail. When the switch is set, as shown in Fig. 1, the free edge of the cover-plate *C<sup>2</sup>* becomes a guard-rail. The opening between  
 60 the switch and either cover-plate is continuous from toe to heel, and all water or dirt will fall into the switch-box when the switch is shifted. Thus it will be seen the switch is self-cleansing and always free from obstructions.

65 In order to prevent a possible accumulation of dirt or other obstruction on the rail in the vicinity of the switch-box or other point

where it would be likely to obstruct the free movement of the switch, the aforementioned opening is continued for some distance beyond  
 70 the switch-box at either end by means of the guard-rails *I*, in addition to the tread-rails *J*, as shown in Figs. 20 and 21. Any suitable drain may be connected with these openings to carry off the water, as from a shower, and  
 75 the cover-plates can readily be removed to obtain access to the interior of the box when cleaning or repairing is rendered necessary.

Various modifications of my invention may be made without departing from the spirit or  
 80 sacrificing the principle thereof. For instance, the switch-point may be differently mounted and the lateral movement of said point may be obtained by any well-known means, and the internal construction of the  
 85 switch-box may also be varied.

In the modification illustrated in Figs. 6 and 7 the switch-point and its base-plate are shown mounted upon short plates *L*, which are provided on their inner edges with rollers *l*  
 90 that bear against cross-bars *M*, secured to the inner walls of the box, and serve to preserve the parallel movement of the switch. To avoid friction, steel springs *N* are secured transversely to the base-plate of the switch, and  
 95 the ends of said springs are provided with rollers *O*, which ride easily upon the cross-bars *M*. This mechanism sets sufficiently low in the box to move freely under the cover-plates, and the corrugated edges of the switch-base  
 100 alternately pass under the edges of said cover-plates as the switch is shifted to one side or the other.

In the modification illustrated in Figs. 8 and 9 the lateral movement of the switch is  
 105 obtained by providing the switch-point with suitable bearings *P*, secured to transverse bars or plates *P<sup>2</sup>* attached to the switch-point, and mounting said switch-point upon similar bearings *P'* secured to transverse bars or  
 110 plates *P<sup>3</sup>*. Each set of bars or plates *P* and *P'* are connected together by rods *Q*, which are in turn connected together by vertical arms *R*. The great advantages of this last-described form of device will be readily apparent in the  
 115 solidity of its parts and the perfectly free movement of switch. Being adaptable to either rail of the track, it can be used either as a right or left hand switch. When used as a right-hand switch and the point moved  
 120 over to the left side edge of the cover-plate, the side edge of the right-hand or opposite cover-plate becomes the tread-rail for the wheels, and when used as a left-hand switch and the point moved over to the side edge of  
 125 the cover-plate, the side edge of the right-hand or opposite cover-plate becomes the tread-rail for the wheels, and when used as a left-hand switch and the point moved over to the side edge of the right-hand cover-plate  
 130 the side edge of the left-hand or opposite cover-plate becomes the tread-rail. In this way it will be observed that the side edge of the cover-plate on either side becomes a tread-



rail, while the side edge of the opposite cover-plate serves as a guard-rail, and also as a stop for the movable point.

This box and switch may be adapted to any form of curve, and the parts can readily be removed when they become worn or broken and replaced by others without disturbing either the box or pavement, except to remove the cover-plates. The side extensions A' are dispensed with, and the platform or rail-seats afford a rigid means of attachment for the ends of the connecting-rails and all moisture is instantly removed through the continuous channel between the tread and guard rails, as heretofore explained.

In Figs. 10, 11, and 12 are illustrated various modified forms of rockable switch-points which can be adapted to either right or left hand without removal. Fig. 10 shows a set in duplicate of right and left hand switches which are mounted longitudinally upon a shaft adapted to be rocked in suitable bearings made in the ends of the switch-box. The form shown in Fig. 11 is also a right and left hand switch mounted upon a segmental shaft having its ends adapted to be journaled in bearings in the ends of the box, while the form shown in Fig. 12 is mounted and operated similar to the switch shown in Fig. 4.

In Fig. 19 is represented a detachable form of rail-seat or platform the brackets *b* of which are provided with lugs *b'* for securing the seat or platform to the ends of the switch-box. Two of these seats or platforms may be bolted together back to back and used as ordinary rail-joint seats.

In Figs. 22 and 23 are shown sections of rails similar to those shown in Fig. 21. To the top of the rail-guard *I* is secured a plate *I'* which partially covers the opening between the rails, and lugs *xx* serve as rests to support the projecting edges of the said plate. The deep channel thus formed receives all dirt or other substances.

The switch herein described and illustrated in the accompanying drawings is especially adapted as a derailing-switch, and may be operated at a point distant from the location of the switch itself by means of the following-described mechanism, which, however, forms no part of the present invention, but is the subject-matter forming a part of an application filed by me March 13, 1895, Serial No. 541,615, and is a division of the present application.

Pivotaly attached to the switch at any suitable point is one end of a rod *S*. The other end of said rod projects through a hole *S'* in one side of the switch-box, and is pivoted to a crank-arm *V* secured to a rod *U*, which extends some distance beyond the switch, preferably at or near a point where the track in which the switch is located crosses another. The free end of the said rod is provided with an operating-lever *X*, by means of which the switch may be shifted to divert a car from the main track onto a siding or throw-off rails

or to permit the car to continue on the main track.

When the switch is used as a derailing-switch the switch-point is normally in position to shunt a car from the main track onto the side or throw-off rails, as shown in Fig. 20, and in order for a car to proceed on its proper course the operating-lever must be lifted to throw the switch-point over to the opposite side of the box or against the cover *C'*. When the operating-lever is dropped the switch-point is returned to its normal position.

As shown in the drawings, the rods *S* and *U* may be suitably supported by bearings *w* and inclosed by boxes or pipes *W*; but it will be understood that any of the well-known means for operating switches may be employed to shift the switch.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a switch mechanism, the combination, with a switch-supporting box having a drainage-opening and provided with end rail seats or platforms, of cover-plates separated by a central channel, and a detachable switch mounted in said box and adapted to be moved laterally, substantially as specified.

2. The combination, of a switch-supporting box provided with detachable cover-plates, a laterally-movable switch mounted in a channel between said cover-plates, and a rail seat or platform at each end of said box, supporting the end of the tread and guard rail in such manner that a continuation of the channel, between said cover-plates, is formed at each end of the switch-supporting box, substantially as specified.

3. In a switch mechanism, the combination, with a switch-supporting box, provided with detachable cover-plates separated by a longitudinal channel, a switch laterally movable in said channel, and a rail seat or platform at each end of said box, of tread and guard rails having one end secured to the seats or platforms, and separated to form a continuation of the channel between the cover-plates, said rails being curved at points of approach to and egress from the switch, substantially as specified.

4. In a switch mechanism, the combination, with a laterally-movable switch-point and guard-rail thereto, of adjacent tread and guard rails, curved at points of access to and egress from the switch, substantially as specified.

5. In a switch mechanism, the combination, with a switch-supporting box, provided with drainage-openings, and a laterally-movable switch, of tread and guard rails, curved at points of access to and egress from said switch, substantially as specified.

6. In a switch mechanism, the combination, with a switch-supporting box, provided with cover-plates separated by a channel, and a laterally-movable switch situated in said



channel, of tread and guard rails separated by a channel, forming a continuation of the channel between the cover-plates, the side edge of one cover-plate serving as a tread-rail, when the switch is in one of its two positions, substantially as specified.

7. In a switch mechanism, the combination, with a switch-supporting box, provided with cover-plates separated by a longitudinal channel, and a laterally-movable switch mounted in said channel, of tread and guard rails separated by a channel in line with the channel between the cover-plates and having one end secured in seats attached to the switch-box, whereby the side edges of said cover-plates serve as guard and tread rails, substantially as specified.

8. A switch-supporting box, provided with suitable drainage-openings and end rail-seats, and formed with an interior flange and projecting cover-supports, and having cover-plates, substantially as specified.

9. The combination, with a switch-supporting box, provided with end recesses, of a shaft having its ends journaled in said recesses, and a laterally-movable switch-point, detachably mounted upon said shaft, substantially as specified.

10. The combination, with a switch-supporting box, provided with end recesses, of a shaft having its ends journaled in said recesses, and a laterally-movable switch-point, provided with depending lugs or supports mounted upon said shaft and detachably secured thereto, by means of a curved arm or hook, substantially as specified.

11. The combination, of the switch-support-

ing box, provided with cover-plates  $C'$   $C^2$  separated by a central channel, a rail-seat secured to each end of said box, and continuous rails  $J$  and guard-rails  $I$ , secured to said seats and separated by a channel in continuation of said central channel between the cover-plates, substantially as specified.

12. The combination, with a laterally-movable switch, of approach guard and tread rails separated by a drainage-channel, a guard-plate upon said guard-rail, partially closing said channel, and lugs  $x$   $x$  attached to the guard-rail and adapted to rest upon the flange of the tread-rail, substantially as specified.

13. The combination, of a switch-box, the approaching guard and tread rails, a channel between said rails, and projecting lugs situated in said channel, below the line of travel of the car-wheel flanges, substantially as specified.

14. The combination, of the contiguous guard and tread rails, a channel between the same, suitable projections extending across said channel, and unobstructed spaces or openings between said projections, substantially as specified.

15. The combination, with the switch-supporting box, of a rail seat or platform comprising a rail-supporting ledge, provided with end supports which afford an unobstructed opening beneath the rail, substantially as specified.

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Witnesses:

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