

(No Model.)

2 Sheets—Sheet 1.

A. J. MOXHAM.

TONGUE SWITCH FOR STREET RAILWAYS.

No. 364,725.

Patented June 14, 1887.

Fig. 1.

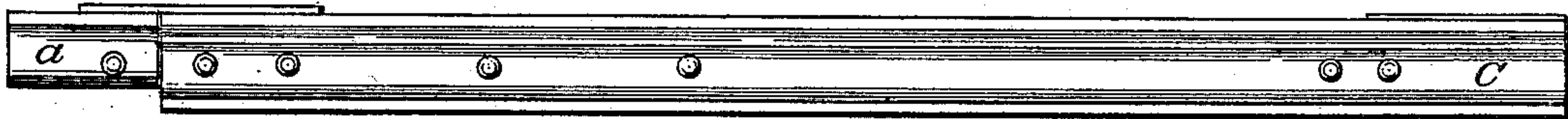


Fig. 2.

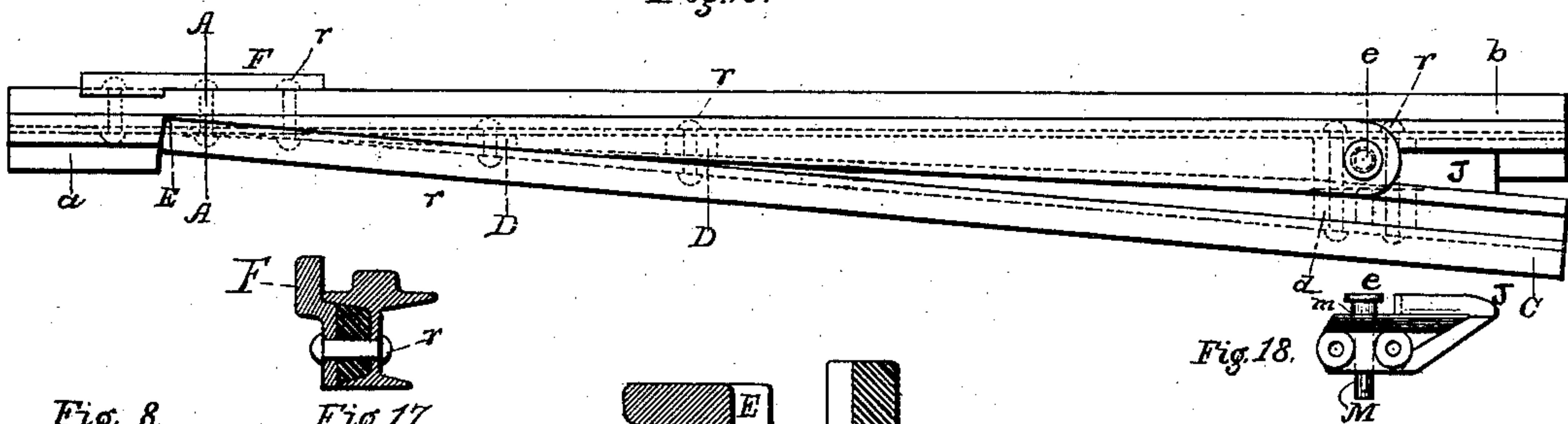


Fig. 8.

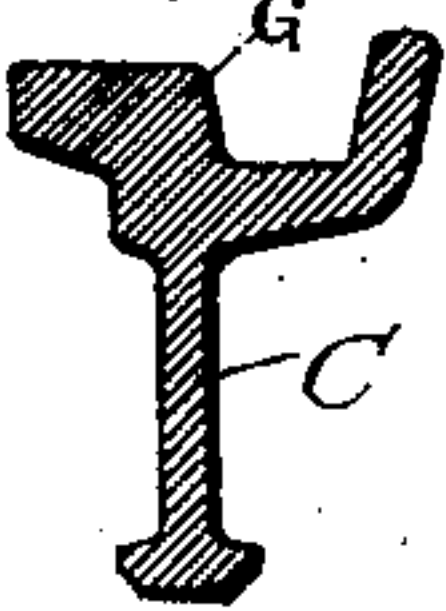


Fig. 17.



Fig. 3.

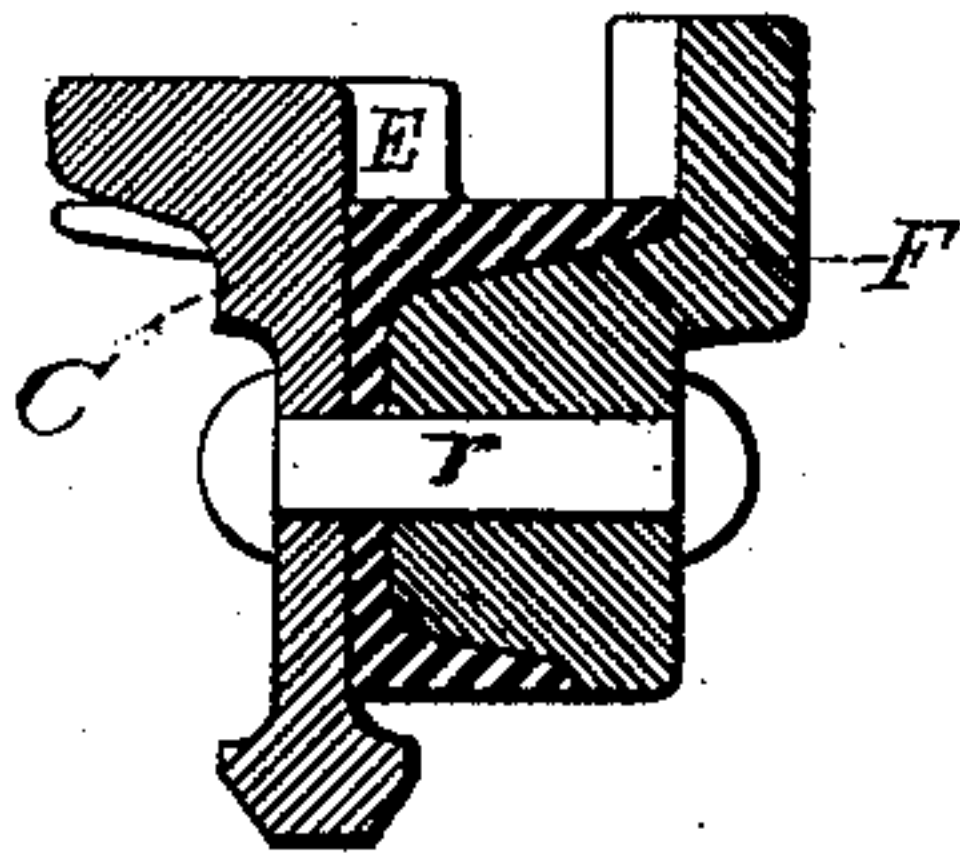


Fig. 7.

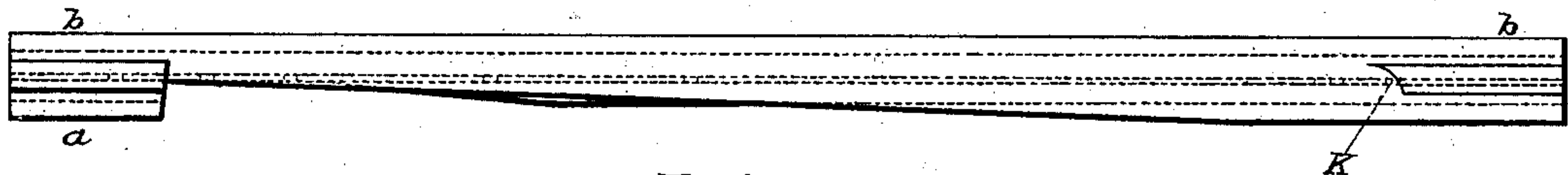
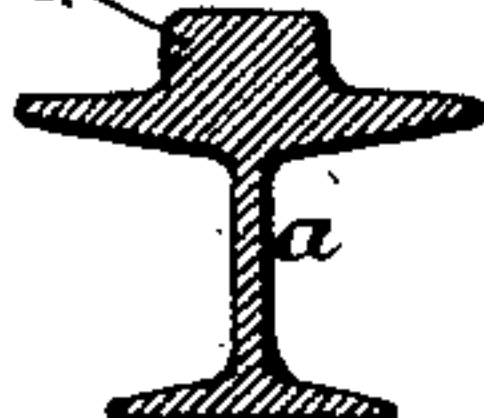


Fig. 4.

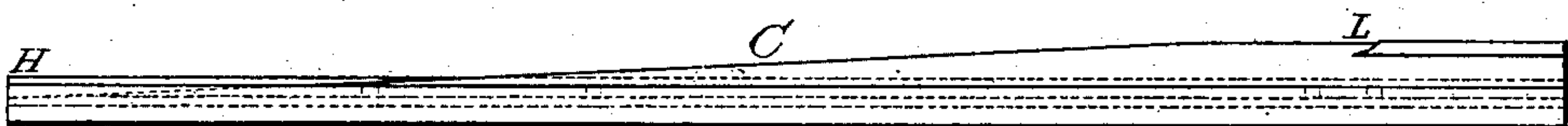


Fig. 5.

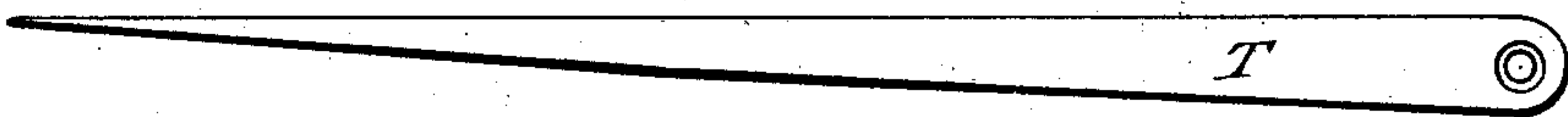


Fig. 6.

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2 Sheets—Sheet 2.

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Fig. 9.

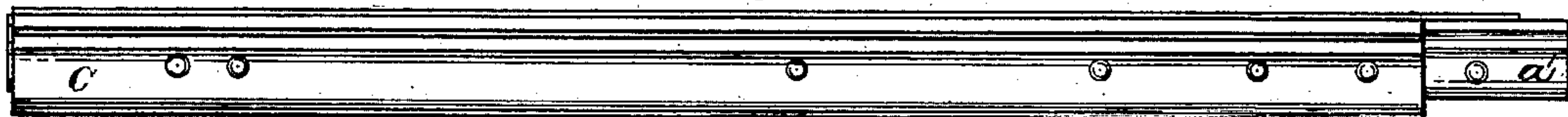


Fig. 10.

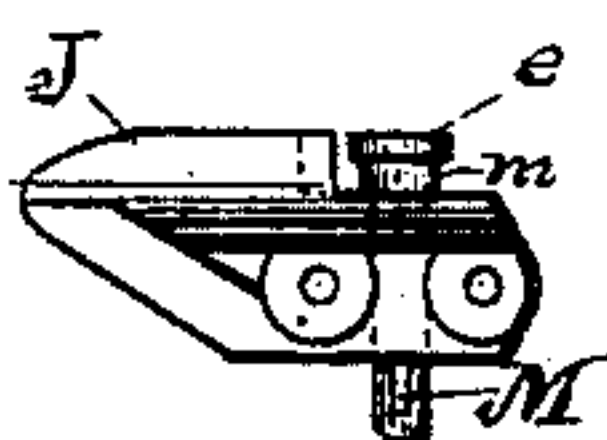
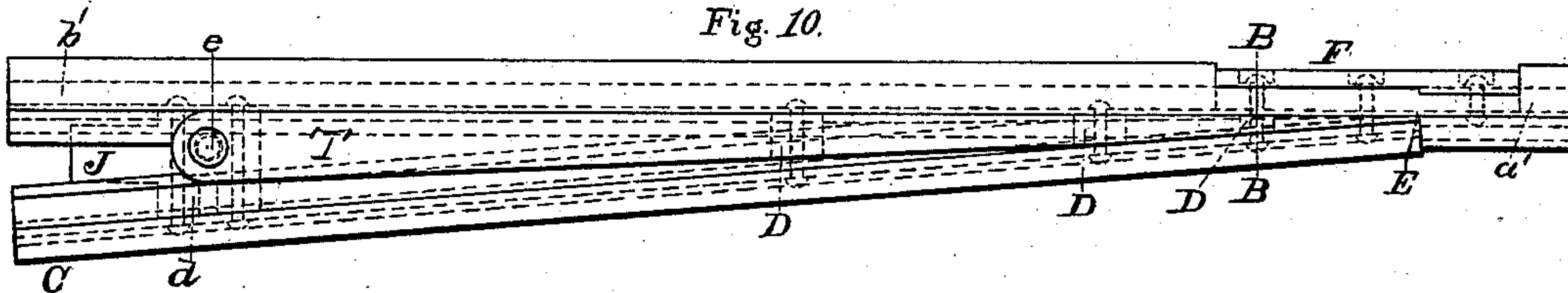


Fig. 19.

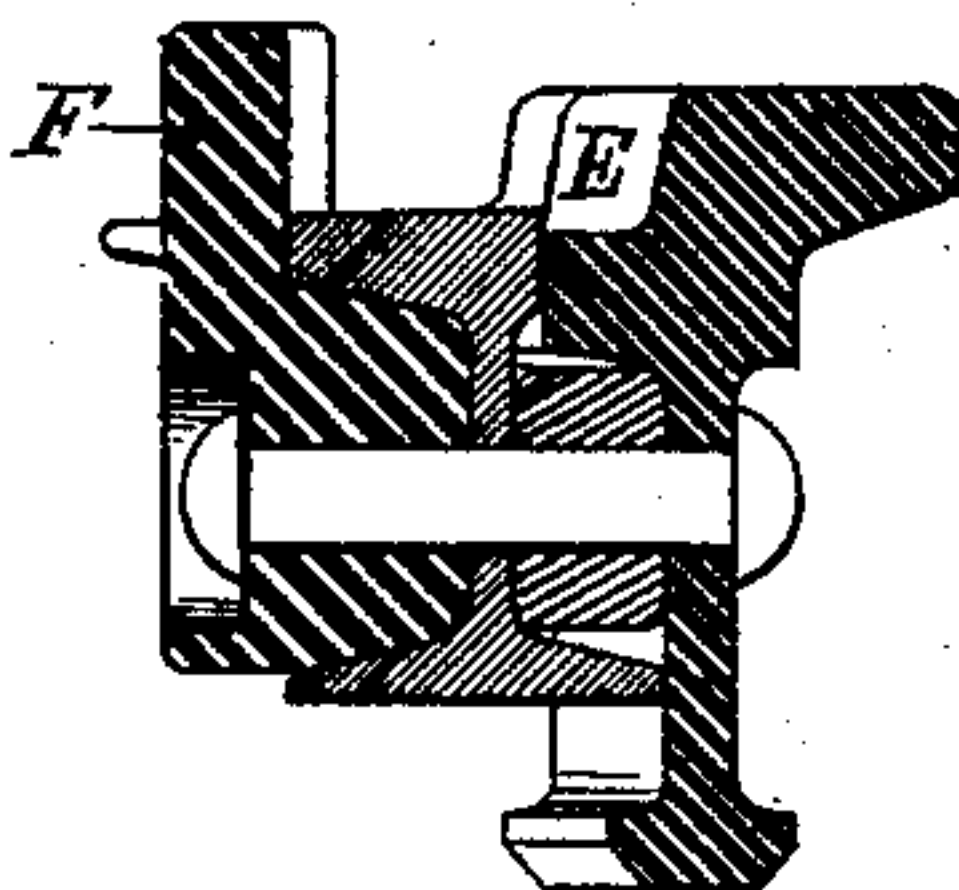


Fig. 14.

Fig. 11.

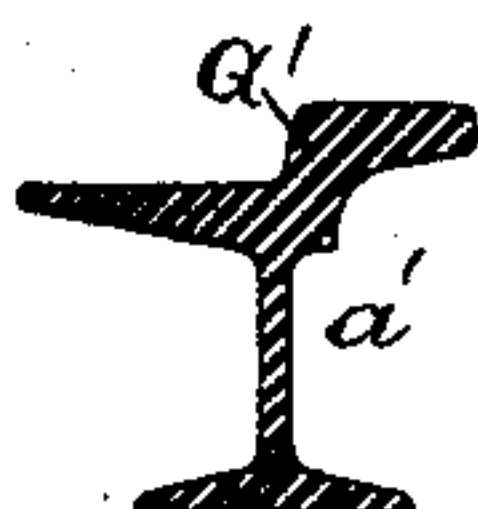
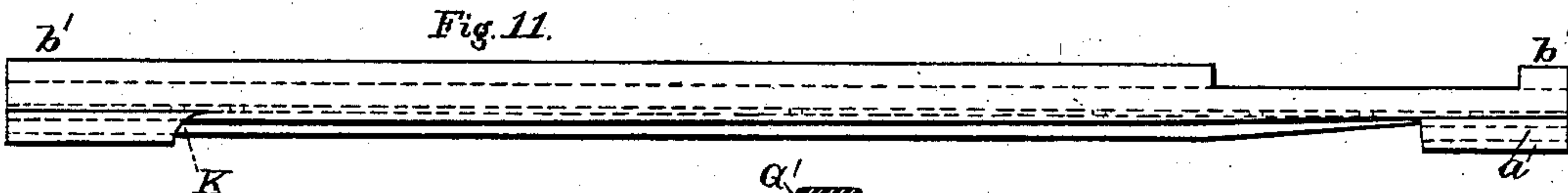


Fig. 15.

Fig. 12.

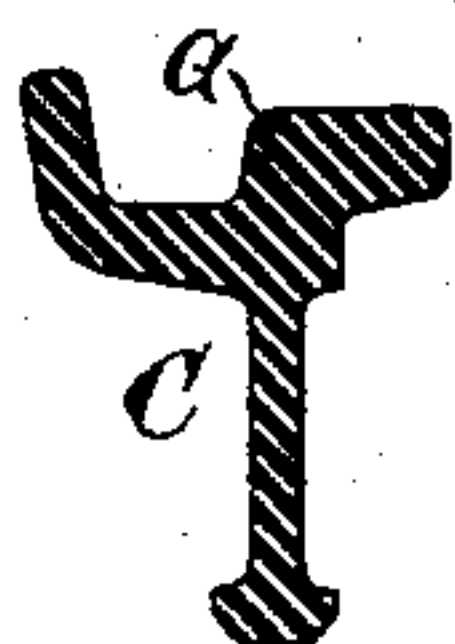
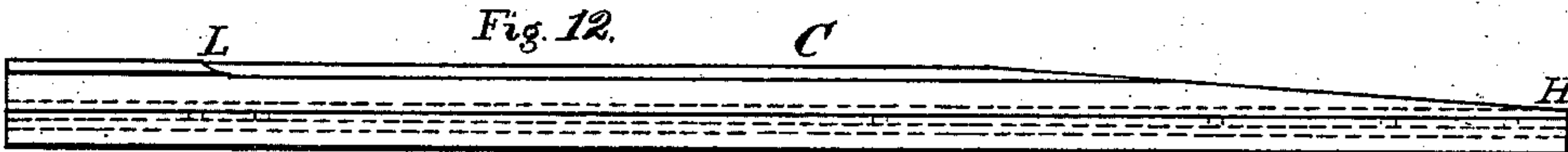
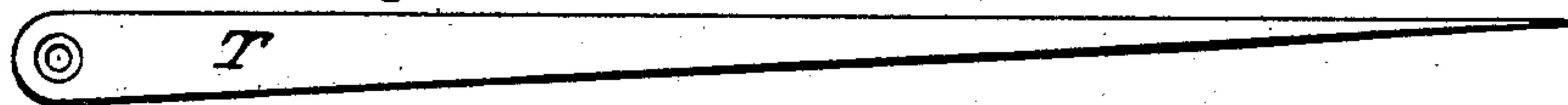


Fig. 16.

Fig. 13.



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UNITED STATES PATENT OFFICE.

ARTHUR J. MOXHAM, OF JOHNSTOWN, PENNSYLVANIA.

TONGUE-SWITCH FOR STREET-RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 364,725, dated June 14, 1887.

Application filed October 26, 1886. Serial No. 217,290. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR J. MOXHAM, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented new and useful Improvements in Tongue-Switches for Street-Railways, which invention or improvements are fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to make a durable tongue-switch for street-railways which can be readily and quickly put in place and connected to the main rails of the track.

The invention consists of a tongue-switch composed of a girder-guard-rail and a plain girder-rail of either a center-bearing or a side-bearing type.

In the accompanying drawings, Figure 1 is a side elevation of a center-bearing switch composed of a guard-rail and center-bearing rail. Fig. 2 is a plan of the same. Fig. 3 is a section through A A, Fig. 2. Fig. 4 is a view in plan of a center-bearing girder-rail after planing and before riveting to the guard-rail. Fig. 5 is a view in plan of a guard-rail after being planed and before the center-bearing rail, Fig. 4, is riveted thereto. Fig. 6 shows the tongue of a center-bearing switch. Fig. 7 shows in cross-section a center-bearing rail, such as shown in side elevation and plan, respectively, in Figs. 1 and 2. Fig. 8 shows in cross-section a guard-rail such as is shown in side elevation and plan, respectively, in Figs. 1 and 2. Fig. 9 is a side elevation of a side-bearing switch composed of a guard-rail and a side-bearing rail. Fig. 10 is a plan of the same. Fig. 11 is a plan of a side-bearing rail as cut away previous to riveting. Fig. 12 is a plan of a groove-rail as cut away previous to riveting. Fig. 13 shows the tongue of a side-bearing switch. Fig. 14 is a section through B B, Fig. 10. Fig. 15 shows in cross-section a side-bearing rail such as is shown in side elevation and plan, respectively, in Figs. 9 and 10. Fig. 16 shows in cross-section a guard-rail such as is shown in side elevation and plan, respectively, in Figs. 1 and 2 and 9 and 10, and as is also shown in similar cross-section in Fig. 8. Figs. 17, 18, and 19 illustrate details, herein-after described.

In said figures the several parts are indicated by letters of reference as follows:

The two switches illustrated, one in Fig. 1 and the other in Fig. 9, are intended to be used, either one or the other, according to the character of rail used in the main track to which the switch is to be applied. If the particular track be composed of center-bearing rails, then the switch shown in Fig. 1 will be used; but if the track be composed of side-bearing rails then the switch shown in Fig. 9 will be used. In either of said Figs. 1 and 9, as well as in Figs. 2 and 10, being, respectively, views in plan of Figs. 1 and 9, the guard-rail C is planed away, so as to fit into and against the similarly-planed straight rails *b* or *b'*, the respective rails being united together by rivets *r* through the spacing-chocks D *d*, Figs. 2 and 10, the spacing-chock *d* being cored out in each figure to act as a bearing for the pin *e*, on which the tongue T vibrates, as hereinafter more particularly described. Before riveting the two rails together they are so planed as to cause the edge or gage line G of the guard-rail C to form a recess or step, E, by not coming true to the gage-line G' of rail *a* *a'*. (See Figs. 2, 10, 7, 8, 15, and 16.) The outside guard-pieces, F F, secured to the point of the switch, are similarly recessed. The object of this provision is to protect the extreme point of the tongue when thrown to either side, so that an approaching car-wheel will not strike the point or catch upon and move the tongue. The lug J, forming part of the chock *d*, acts both to secure a good end support against the thrust of the round-ended base of the tongue, and also acts as a lifter for the wheels of street-wagons which may happen to be driven against the end of the tongue. Provision for good end-bearing of the tongue is further secured by curving the head of the straight rail *b* or *b'*, as at K K, Figs. 4 and 11. This provision, in conjunction with that in the chock *d*, forms a true and perfect bearing for the end or base of the tongue. The support thus given to the thrust of the tongue is an important provision, for such support tends to relieve the pin *e* of the tongue T from the great strain otherwise necessarily thrown upon said pin, due to the thrust of the tongue when the car-wheels are running on it. The pin *e* is enlarged, as seen at *m*, Figs. 18 and 19, by which means the key M, which holds the pin firmly in place by being driven through a slot in the pin, may be driven

tightly home without causing the pin to pinch or bind the tongue. This construction permits of free vibration of the tongue and absolute rigidity of its pin, besides providing large bearing-surface for the vibration of the tongue.

The guard of the groove-rail C is cut away from L to H, Figs. 5 and 12, to permit of the vibration of the tongue, and in order to form a supporting-floor for the same. The guard F is prolonged for several feet if the cars are to be run over the switches in both directions—that is, backward as well as forward—as will be readily understood by those familiar with street-railway switches and practice, the tongue-switch then acting in one direction to change the wheels of the car from a curved to a straight direction, during which change the wheels are liable to mount the rail if not guarded. Said guard F can be made either of cast-iron, as shown in Figs. 3 and 14, or of rolled steel with an interposed chock, as shown in Fig. 17, in which figure the guard is shown in cross-section in the prolonged part *a* of the switch, where it is only in contact with a plain rail having the forms of *b* or *b'*, as the case may be. The purpose of said prolonged part *a* or *a'* of the plain rail *b* or *b'* will now be evident.

From the side views, Figs. 1 and 9, and the sections, Figs. 7, 8, 15, and 16, it will be seen that all the rails are connected in the straight parts of a track by splice-bars, and while it is quite easy to connect rails having similar cross-sections or forms by such splice-bars, yet it is a matter of considerable difficulty to so connect two differently-shaped rails, particularly when the splice-bars must be forged to special shape for such connection. By prolonging either straight rail of the form *b* or *b'*, as the case may be, and riveting the guard-rail by the rivets *r*, as shown in the drawings, the joints are kept uniform and simple, a guard-rail curve always branching off from a straight track. Thus by this prolongation the work of the street-railway track-layers in making the connections between the main rails and switches is reduced to only the simple connection of two similarly-shaped rails, and the difficult connection of the two odd-shaped rails is left to the switch-manufacturer, who can make such connection to better advantage and at no increased cost. In neither of said switches is the prolongation of the straight rails *b* or *b'*, as shown at *a* or *a'*, as hereinbefore described, imperatively necessary. It is, however, advantageous for the reasons just given. It is evident from the descriptions above given that the rails shown in cross-section in Figs. 7 and 15, marked with, respectively, the letters *a* or *a'*, are the same rails marked, respectively, *b* or *b'* in plan, Figs. 2 and 10, said parts *a* or *a'* being but prolongations of said rails *b* or *b'*.

It will be observed that at the broad end of either switch the guard of the guard-rail is entirely cut away, and the base of the tongue is made broad enough to entirely fill the space between the guard of rail C and the gage-line of rail *b*, and between the guard of rail C and its side-bearing rail *b'*, composing the respective switches shown in Figs. 2 and 10. This construction is not only advantageous in giving a wide tongue, and therefore one that is stable and steady, but it prevents all danger of the car-wheels catching in the point of the guard that would otherwise be exposed.

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

1. In a girder-rail tongue-switch, a rail-chock, as *d*, provided with a hole for receiving a pin, as *e*, substantially as and for the purposes set forth.

2. In a girder-rail tongue-switch, a rail-chock, as *d*, provided with a lug, as *J*, curved to form part of a thrust-bearing for the thrust of the tongue, substantially as and for the purposes set forth.

3. In a girder-rail tongue-switch, an outside guard-piece, as *F*, provided with a recess, as described, to receive and protect the point of the tongue, substantially as set forth.

4. In a girder-rail tongue-switch, the combination of two girder-rails fitted and riveted together, with their gage-lines overlapping or offset, forming a step, as *E*, to protect the point of the tongue, substantially as set forth.

5. In a girder-rail tongue-switch, in combination with a girder-rail and a girder guard-rail, a tongue, as *T*, secured upon a pin or pivot at its base, said base being set in contact with both the gage-line of said girder-rail and the inner edge of the guard of the guard-rail, substantially as and for the purposes set forth.

6. In a girder-rail tongue-switch, the combination of a girder guard-rail and a girder-rail fitted and secured together substantially as described, and having the guard of the guard-rail cut away to form a floor-surface for the tongue and room for its sweep or vibration, substantially as set forth.

7. In a girder-rail tongue-switch, the combination of a girder guard-rail and a girder-rail, said rails being united at their converging ends, but having the girder-rail prolonged beyond their junction, as at *a* or *a'*, substantially as and for the purposes set forth.

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Witnesses:

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