(No Model.)

E. THOMSON.

FROG FOR OVERHEAD WIRES.

No. 432,581. Patented July 22, 1890.

FIG. 1.

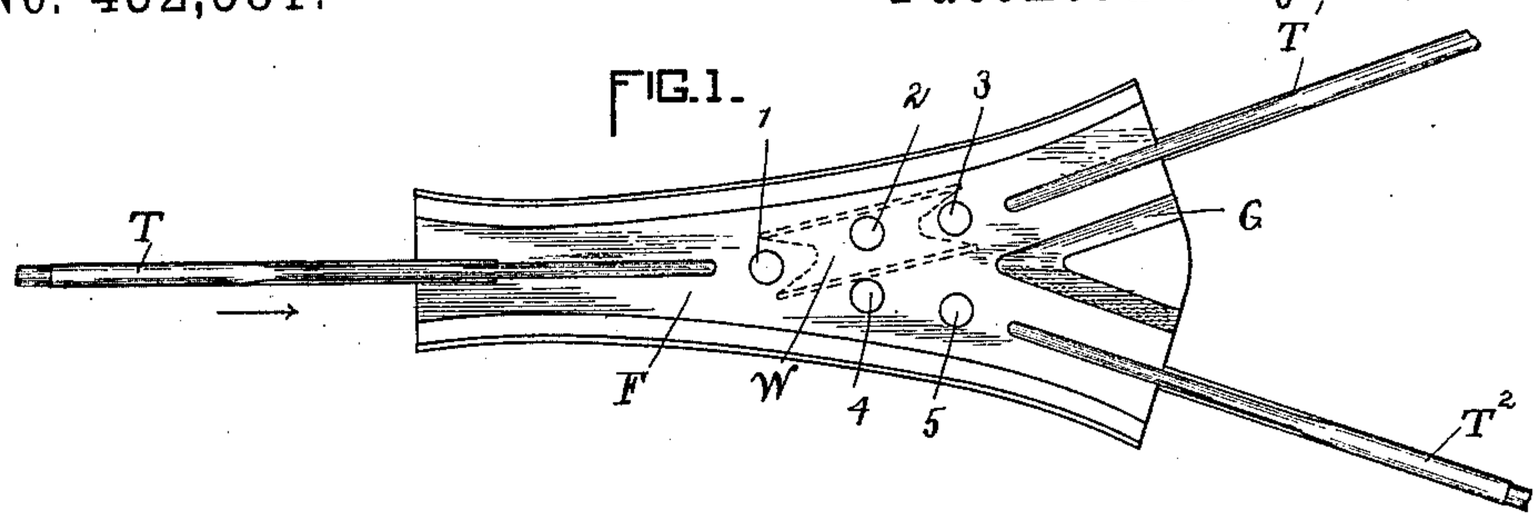


FIG. 2.

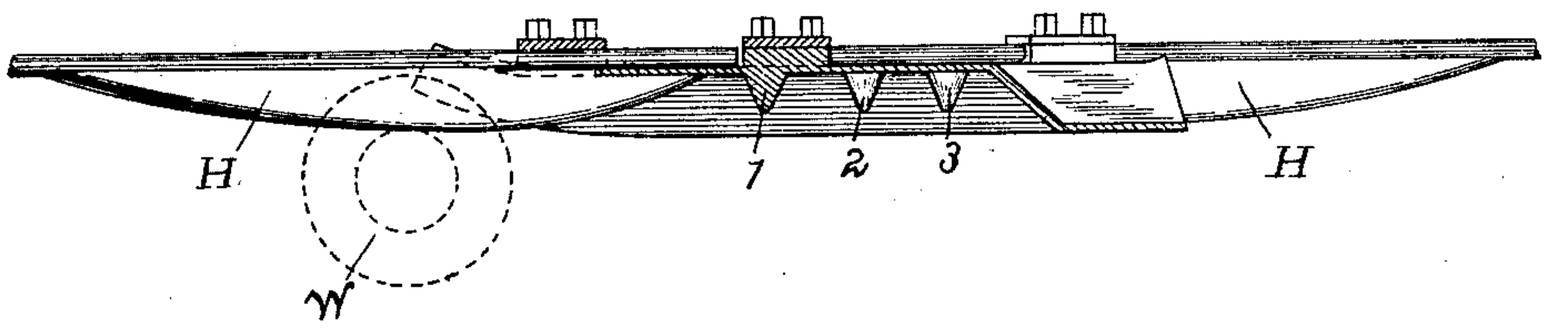


FIG. 3.

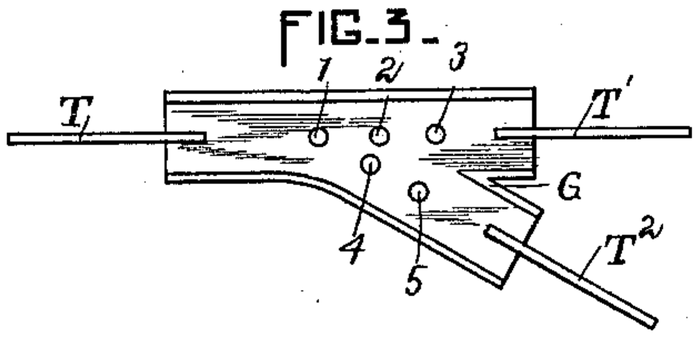


FIG. 4.

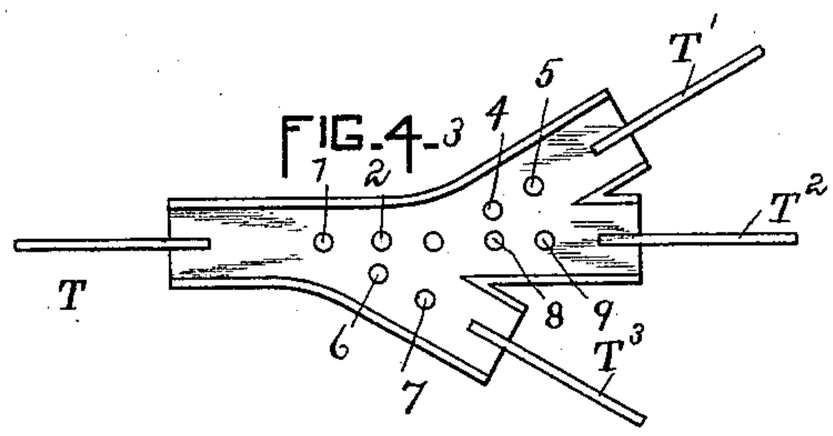
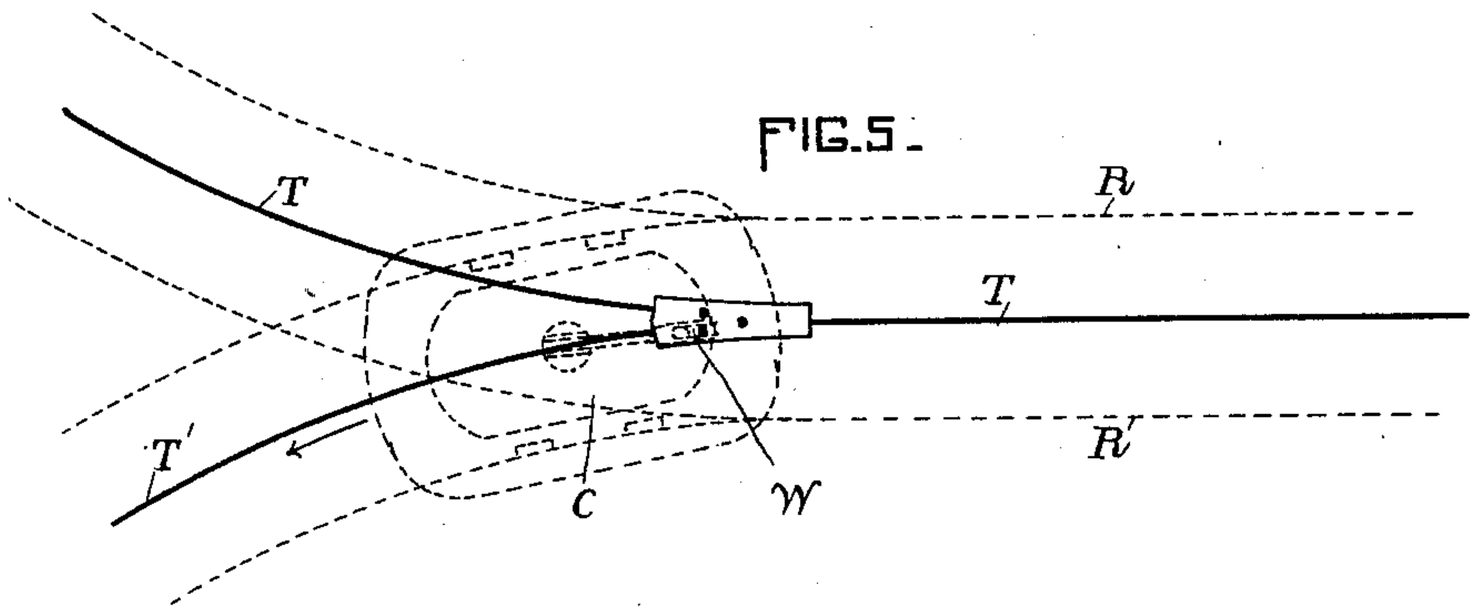


FIG. 5.



WITNESSES.

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FROG FOR OVERHEAD WIRES.

SPECIFICATION forming part of Letters Patent No. 432,581, dated July 22, 1890.

Application filed May 5, 1890. Serial No. 350,660. (No model.)

To all whom it may concern:

Be it known that I, ELIHU THOMSON, a citizen of the United States, residing at Lynn, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Frogs for Overhead Lines, of which the following is a specification.

My present invention consists in improvements whereby the trolley-wheel is properly directed along the desired line of travel, and whereby the trolley-wheel is prevented from jumping off the frog, as now frequently happens, being subject to centrifugal force on curves.

My invention specifically consists in providing a series or set of devices, such as pins or projections from the frog, which the trolley-wheel engages and which prevent a side or lateral motion of the wheel, thus preserving its proper direction of motion to take the desired overhead conductor.

Figure 1 illustrates in plan a frog for an ordinary turn-out in a single track embodying my invention. Fig. 2 shows a side view of the frog, Fig. 1. Figs. 3 and 4 are modified forms of frogs containing the improvement of my invention. Fig. 5 illustrates the operation of my invention in directing a trolley-wheel.

In Fig. 1, F represents an overhead frog to which lead the trolley-wires T T′, the outside of the frog having depending edges or lips for the guidance of the wheel, a similar guide being also provided at the point G between the conductors T′ T^2. I have found that when the trolley-wheel is running in the direction of the arrow great difficulty is experienced in properly directing it to take the trolley-wire T′ T^2 at the other end of the frog. The trolley-wheel following after the car, it is the common practice to depend upon the motion of the car in turning at a switch to direct the trolley-wheel above to the proper corresponding trolley-wire; but I find that the momentum of the trolley-wheel and the trolley-bar is so great on curves, &c., that the movement of the car beneath is not sufficient to always divert the wheel from its tendency to follow the direction of the line T, in which case the trolley-wheel strikes against the guard G and is thrown off the overhead wire. I overcome this difficulty by providing series of pins 1 2 3 4 5, arranged in lines corresponding to the diverging trolley-wires, about as indicated on the drawing. The trolley-wheel W, after leaving the wire T, takes the pin 1, and, supposing the car beneath to have turned in the direction of the line T′, the trolley-wheel is made to turn toward the position indicated in dotted lines. One flange of the wheel W then rests against the pin 4, which prevents any lateral motion in a direction to strike the guard G, after which the pins 2 3 engage the wheel in turn and direct it to the line T. The pins 1 2 4 5 act in a similar manner to direct the trolley-wheel to the line T, when the car takes the switch below in this direction.

Fig. 2, which is a side elevation of Fig. 1, shows also my improvements. 1, 2, and 3 are the guiding-pins described in Fig. 1, and there shown in plan, and indicate the relative height which the pins may have as compared with the other parts of the frog and the trolley-wheel. The wheel W is shown as just entering the frog, and it will be noticed that the outer end of the frog is bent upward. The guide H descends so that the edge of the trolley-wheel W is brought down to the plane of the top of the frog-plate on which it travels, and the end of the frog is bent upward, as shown, so that when the trolley-wheel wears away it may ride down the inclined plane so formed and not strike violently against the end of the frog-plate.

In Fig. 3 is shown a two-way frog in which the entering lines T T′ are in line and the line T^2 diverges laterally. The effect of the pins 1 2 4 5 are, as in Fig. 1, to hold the trolley-wheel entering at T and direct it properly to the line T′ T^2 and prevent its striking the guard G and leaving the trolley-wire.

In Fig. 4 is shown two lines T and T^2, forming together a straight line above the track, and two lines T′ and T^3, diverging laterally. It is preferable in such instances not to have the lines T′ T^3 diverge simultaneously, but to have them displaced somewhat, as shown in the drawing, as by this means the pins are more effective for the purpose of guiding the trolley-wheel to the desired side conductor.

The initial directing of the trolley-wheel W at the frog is illustrated in Fig. 5. R represents the rails, and T the trolley-wire, of an

overhead electric-railway system, and C is a car moving in the direction of the arrow. The car is supposed to be leaving the conductor T to take the branch T'. It will be noticed that when the car takes the switch on the track the trolley is thereby turned to take the corresponding overhead conductor, and when kept from striking the guards and being properly directed by the pins I have described will retain its position on the trolley-wire after leaving the frog.

I do not at all limit myself to pins having the shape shown, as it is of course evident that projecting plates having some length could be employed. It is only necessary that the flanges of the trolley-wheel may be able to pass unobstructedly between the guides for the respective lines while the wheel is held at the same time from lateral motion caused by centrifugal inertia.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a branching line-conductor, of a frog at the branching point, having a series of pins by which a contact device bearing on the said conductor is guided in the desired direction.

2. The combination, with a branching line-conductor for an electric railway, of a frog at the branching point, having a series of pins in the line of each branch of the conductor.

3. The combination, with a branching line-conductor for an electric railway, of a frog consisting of a plate at the branching point, having on its under side a series of guiding-pins for the trolley-wheel.

4. The combination, with a branching line-conductor, of a frog-plate to which diverging lines are attached, of a series of pins between the ends of the diverging lines and forming a continuation therefor, respectively.

5. The combination, with frog-plate F, having two or more line-conductors diverging therefrom, the said conductors having each a guide H, but terminating on the plate, of a series of pins or projections between the terminals of the said conductors and in line therewith.

6. The combination, with a frog-plate having two or more trolley-wires diverging therefrom and provided with depending edges or lips for the guidance of the trolley-wheel, of a series of pins between the said edges or lips, adapted to engage with the flanges of the trolley-wheel and direct it to the desired trolley-wire.

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