

No. 845,252.

PATENTED FEB. 26, 1907.

R. E. NOBLE.
RING FOR CONNECTING WIRES.
APPLICATION FILED SEPT. 1, 1906.

Fig. 1

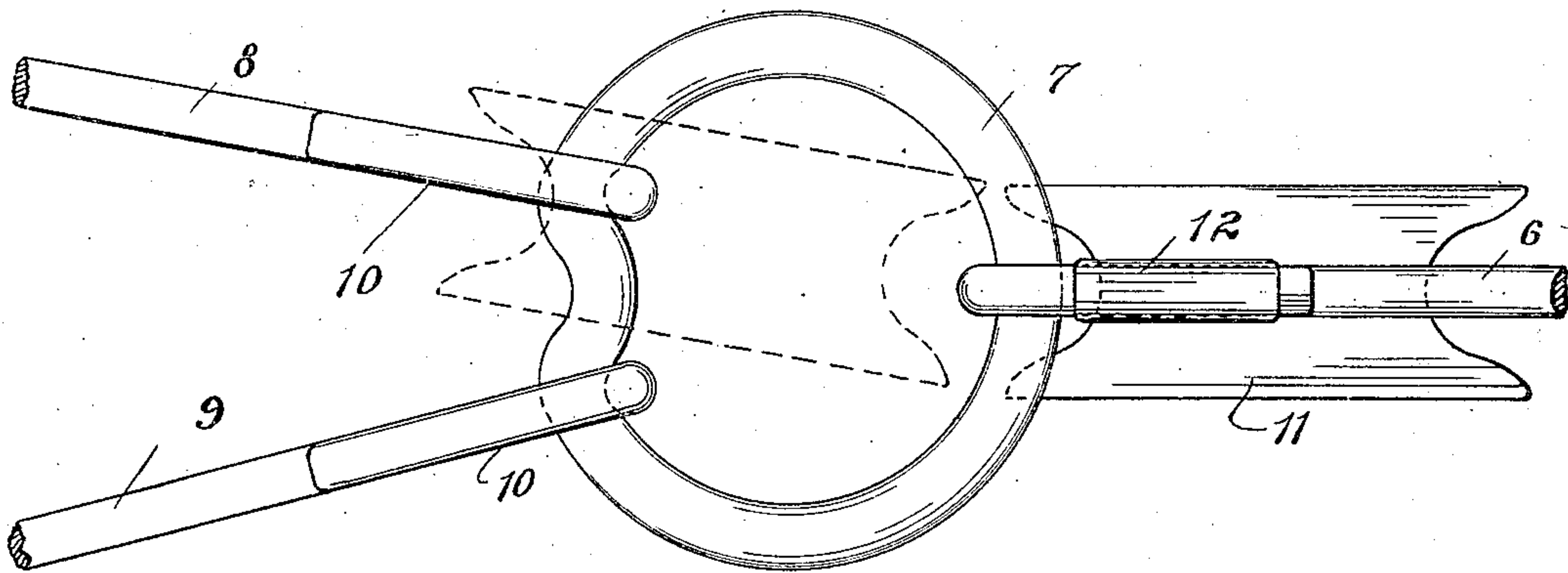


Fig. 2

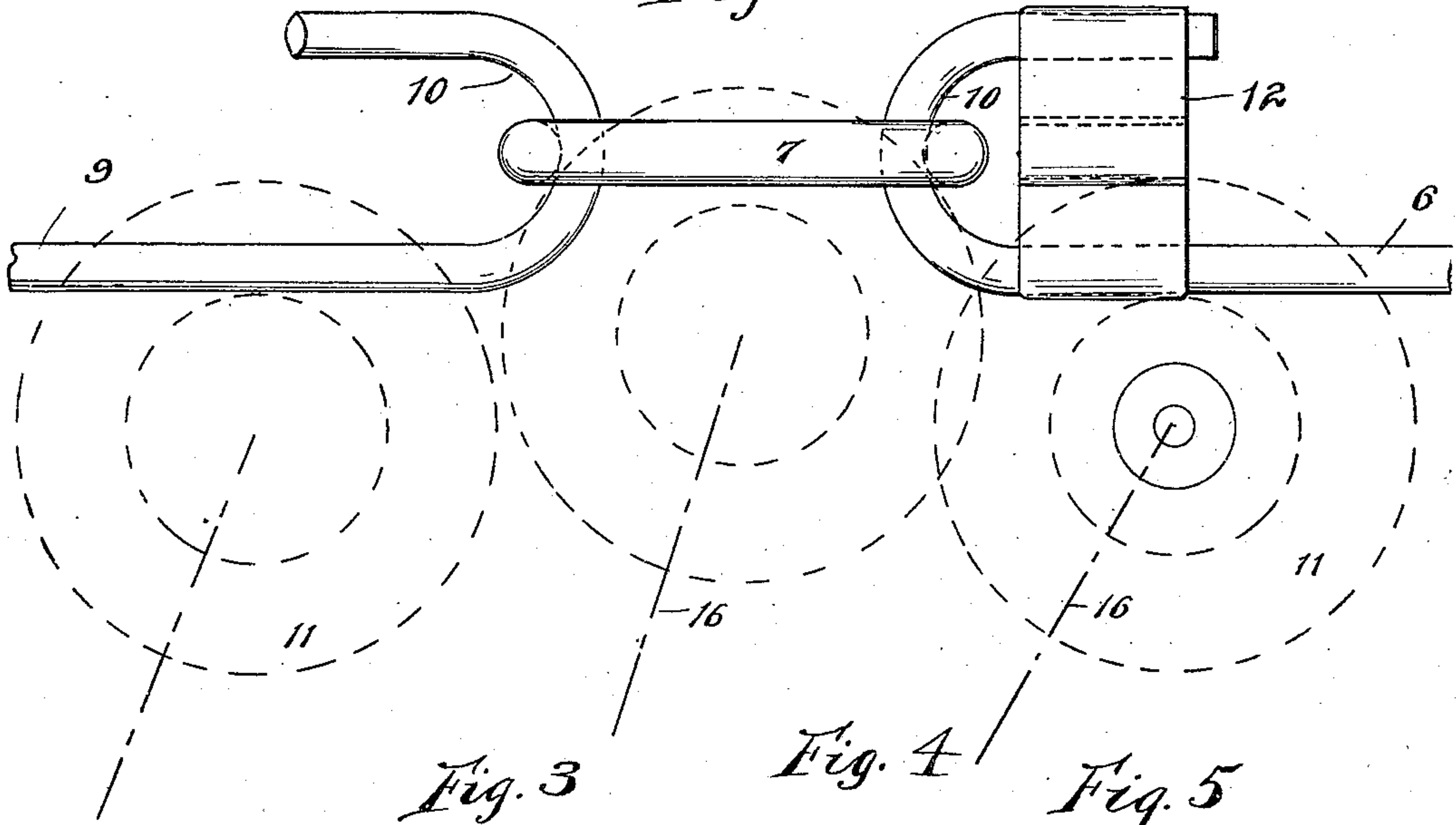


Fig. 3

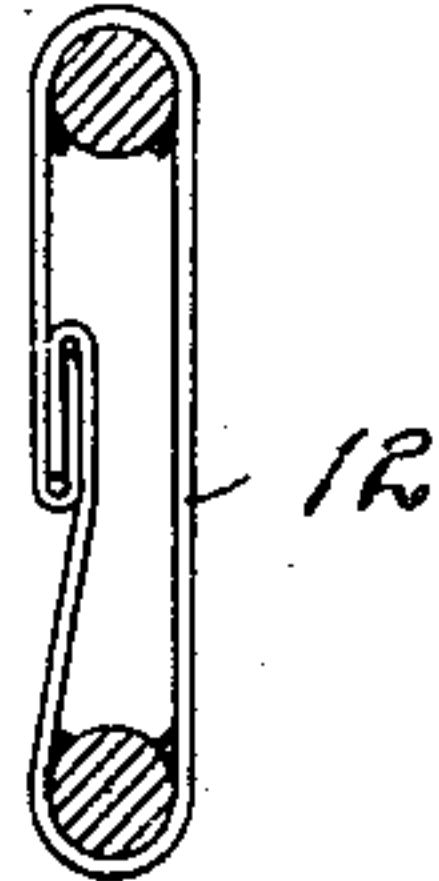


Fig. 4

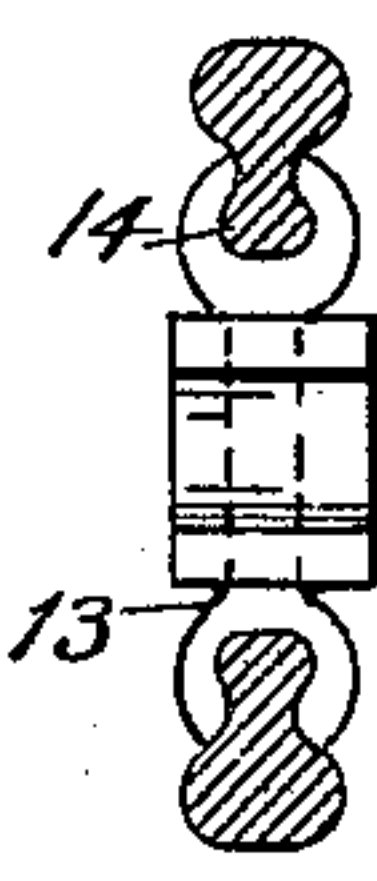
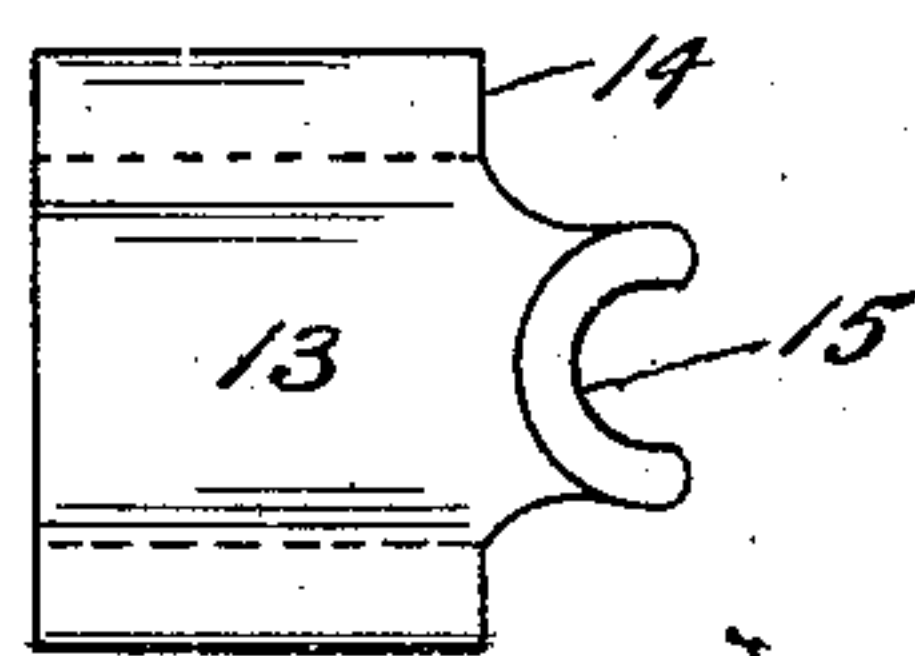


Fig. 5



Witnesses:

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Inventor,
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UNITED STATES PATENT OFFICE.

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RING FOR CONNECTING WIRES.

No. 845,252.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed September 1, 1906. Serial No. 332,887.

To all whom it may concern:

Be it known that I, RALPH E. NOBLE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Rings for Connecting Wires, of which the following is a specification.

This invention relates more particularly to devices or means for connecting the intersecting overhead electric conductor-wires of an electric-railway system at the points where a switch, turnout, or crossing occurs, and to means whereby a trolley-wheel may be switched or allowed to pass from a main conductor to a branch conductor, or vice versa, or may pass along the main line and cross at the connecting-point without being thrown from the conductor.

In an ordinary electric-railway system in which a car or locomotive is provided with an upwardly-projecting and laterally and vertically swinging trolley-pole with a trolley-wheel at the end thereof running under a conductor-wire it is desirable to provide means at switch-points or turnouts so that the underrunning trolley-wheel may be switched from the main conductor to a branch conductor without the necessity of manually guiding the trolley-wheel from such main line to the branch line, or vice versa. This has heretofore been accomplished to a certain extent by means of devices commonly known as "trolley-frogs;" but such frogs are comparatively large and cumbersome affairs and are expensive to manufacture and somewhat difficult to place in proper location for operation.

It is the object of the present invention to provide a simple and efficient device for the purpose above suggested which will be more simple in construction and will have certain advantages over devices heretofore used.

This invention is illustrated in the accompanying drawings, in which—

Figure 1 represents a top plan view of a branching conductor for a trolley system with a connecting-ring embodying the main feature of this invention shown in operative position. Fig. 2 is a side elevation of the same, showing a trolley-wheel passing through the switch formed by said ring. Fig. 3 is a detail view showing one method of securing the bent-over end of the trolley-

wire, and Figs. 4 and 5 are details showing a clip or connection for a different type of wire.

As shown in the drawings, 6 represents a main-line conducting-wire which is connected by means of a connecting-ring 7 with corresponding wires 8 and 9 over branching tracks. Although the drawings show both tracks as branching, of course this device is equally applicable where there is a straight main line and a switch leading therefrom or for a crossover or any other of the common track arrangements.

The ring 7 may be made in any desired form to accomplish the purpose desired; but for an ordinary main and branch track I prefer to make the ring in substantially the shape shown in Fig. 1, which might be called a "heart-shaped ring." The reentrant portion shown at the left forms two points of attachment, as it were, for the wires 8 and 9, the arrangement being such that these wires will be held in recesses thus formed in proper position for the trolley-wheel to engage the same.

The ends of the conductor-wires are bent to form hooks 10 10, which engage with the ring 7, as shown in Fig. 2, the hook being preferably bent so that the ring will lie in a plane somewhat above the plane of the conductor-wires. The object of this arrangement is to allow the flanges of a trolley-wheel 11 to engage substantially tangentially with the lower face of the ring when it passes from the conductor-wire to the ring and again will allow the bottom groove of the wheel to engage substantially tangentially or gradually with the opposite conductor-wire when the wheel again passes out of or beyond the ring. If the trolley-wire is sufficiently stiff, then the hooks formed in the end thereof may be left open, as shown at the left-hand side of Fig. 2—that is, without any connection to prevent them from being straightened out or broken; but, if desired or necessary, the hook may be strengthened in any desired way, as by means of a metallic clip 12, which is bent around the main wire and the end of the hook and fastened in position, as by locking the ends of the clip together, as shown in Fig. 3, and then soldering or in any other desired manner. If Figure 8 or grooved wire is used, then the special clip shown in Figs. 4 and 5 may be applied for locking and strengthening the hook. This clip 13 is pro-

vided with jaws 14, which engage with the smallest or inturned lobes of the wire, as shown in Fig. 4, and the clip is also provided with a projection 15, which engages with the
5 outer edge of the ring 7, thereby not only strengthening the hook, but also supporting the ring in any desired position.

Of course the directive tendency or action is given to the trolley-wheel by the trolley-
10 pole through the action of the car or locomotive in passing through the track-switch. This tendency is to twist or divert the trolley-wheel from the main line, and such twisting tendency is taken advantage of in
15 frogs or switching devices for switching such trolley-wheel from the main line to the branch line, and it is this tendency which I take advantage of in the present instance.

The action of the trolley-wheel 11 in passing
20 the ring is indicated in Figs. 1 and 2, in which the wheel is shown as passing from the right to the left, the trolley-pole being indicated at 16. As a wheel passes from the main conductor 6 to the ring 7 the flanges of the wheel
25 engage with the ring and the upward pressure of the trolley-pole causes the trolley-wheel to rise slightly into the ring, and then as the car moves onto the switch-track the twist or turn of the trolley-pole will cause
30 the wheel to take the corresponding branch conductor, the trolley-wheel gradually disengaging from the ring and the tread or bottom portion of the groove thereof again engaging with the conductor, as indicated at the left
35 of Fig. 2. It will also be noted that in some instances—for instance, if the locomotive or car is passing through the switch at a high

speed—the trolley-wheel may jump or pass directly from one hook to another without touching the connecting-ring.

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

1. The combination with the trolley-wires of an electric-railway system, of a ring at a
45 branching-point in said wires, said ring being adapted to receive said wires and to permit a trolley-wheel to pass from one wire to another beneath the same.

2. The combination with branching overhead trolley-wires formed with hooks in the
50 ends thereof, of a ring to engage with said hooks to hold said wires and to permit the passage of a trolley-wheel from one wire to another.

3. The combination with overhead electric trolley-wires, of a ring connected with said
55 wires at a branching-point, said ring being in a plane somewhat above said wires to permit an underrunning trolley-wheel to pass
60 readily thereunder by engagement of its flanges therewith.

4. The combination with electric conductors having upturned portions at a branching-point thereof, of a ring connecting said
65 upturned portions, and an upwardly-pressed grooved trolley-wheel adapted to engage said ring with its flanges while passing from one conductor to another.

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Witnesses:

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