(No Model.)

J. KROGER.

CROSSING FOR TROLLEY WIRES.

No. 541,098. Patented June 18, 1895.

Fig. 1.

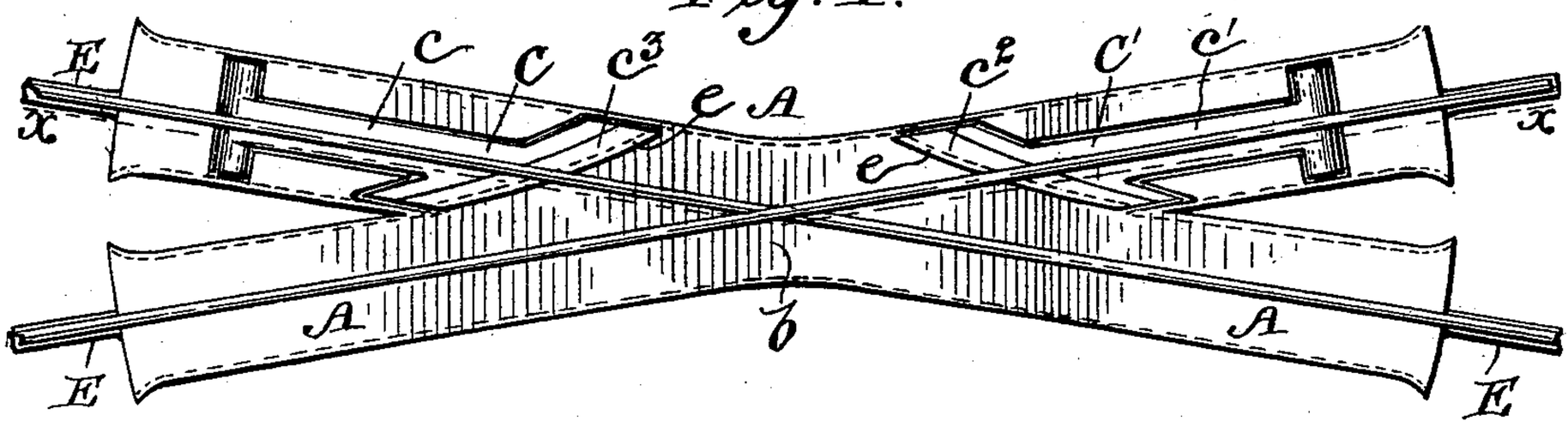


Fig. 2.

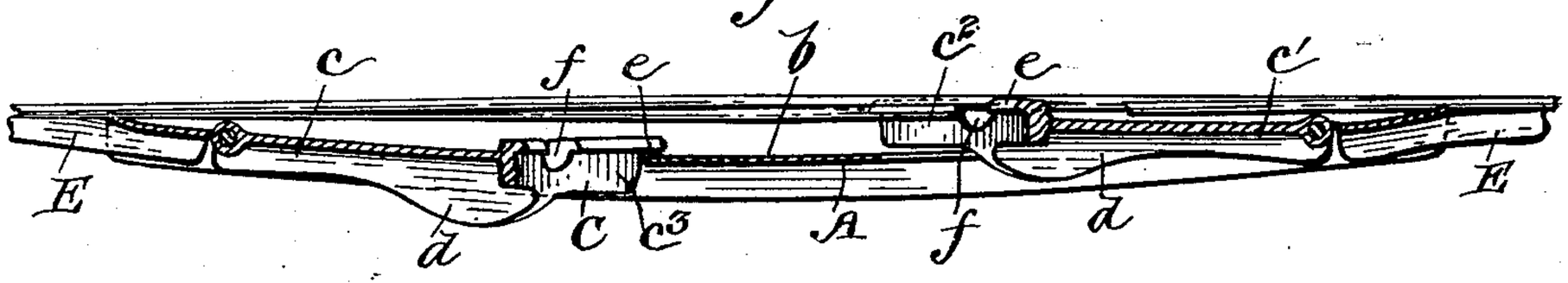


Fig. 3.

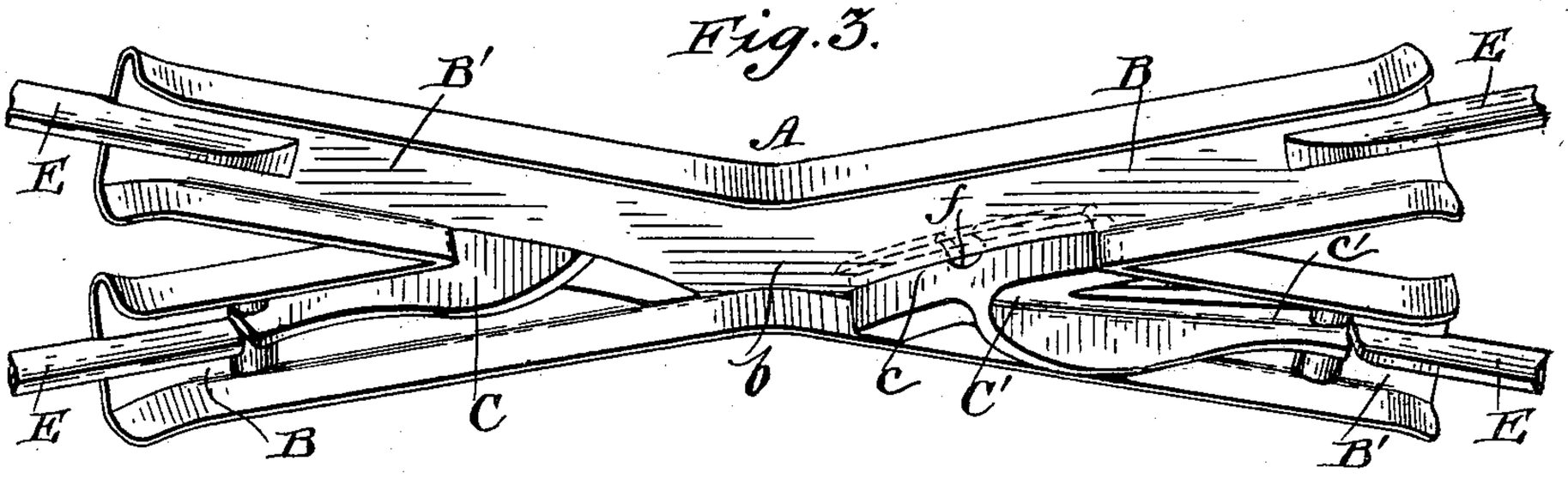
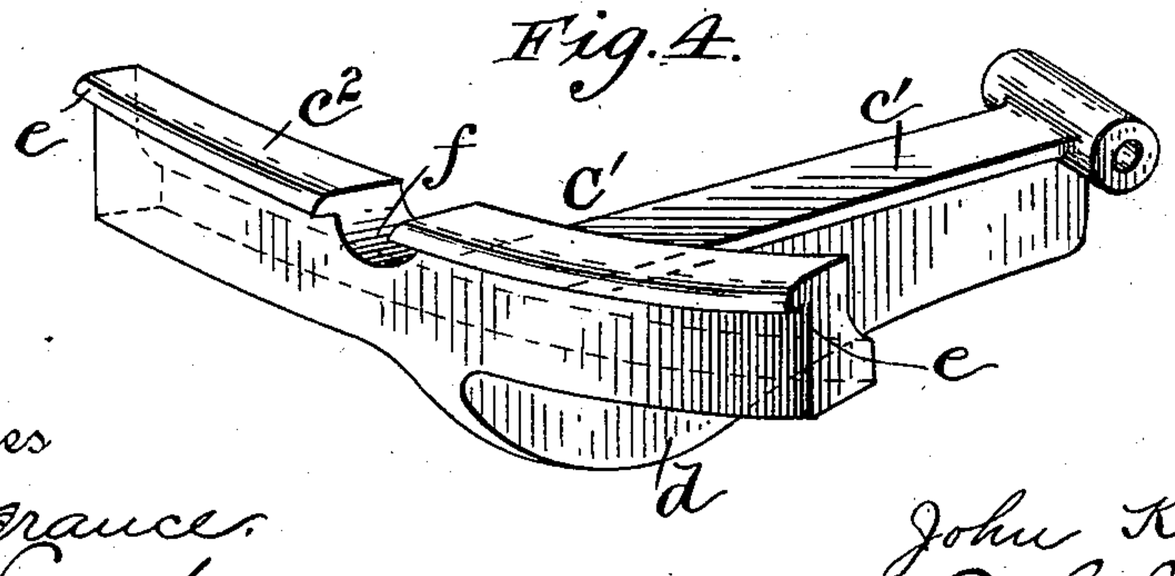


Fig. 4.



Witnesses
Geo. Grance.
N. L. Lauck

Inventor
John Kroger,
By A. G. MacNulty
his Attorney.

UNITED STATES PATENT OFFICE.

JOHN KROGER, OF PLEASANTVILLE, NEW JERSEY.

CROSSING FOR TROLLEY-WIRES.

SPECIFICATION forming part of Letters Patent No. 541,098, dated June 18, 1895.

Application filed November 3, 1894. Serial No. 527,793. (No model.)

To all whom it may concern:

Be it known that I, JOHN KROGER, a citizen of the United States, residing at Pleasantville, in the county of Atlantic and State of New Jersey, have invented certain new and useful Improvements in Cross-Over Guides and Automatic Locks for Overhead Trolley-Wires; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in cross-overs for electric trolley wires, and automatic or gravity locks therefor, and is designed and constructed for use upon trolley wires that cross each other at angles less than a right-angle, and it has for its object the provision of an automatic or gravity guard or lock, so constructed and arranged as to close one of the grooves or guides in the cross-over against the advancing trolley, whereby the said trolley is caused to continue in its proper course out onto its regular line wire.

The invention consists essentially in suitable locks or guards combined with a cross-over for electric trolley wires for the purpose of causing the trolley to make the crossing with certainty and ease.

The invention further consists in the construction and novel arrangement of the parts hereinafter described, illustrated in the drawings and pointed out in the claims hereunto appended.

In the drawings, Figure 1 is a top plan view of the guide attached to the wires and showing the locks in their relative positions to each other and the cross-over. Fig. 2 is a sectional view of the said improved cross-over, taken on the line *x x*, Fig. 1. Fig. 3 is a perspective view of the improved cross-over in proper position upon the wires, showing the position of one of the locks or guards when raised by the proper trolley to make a continuous passage through the cross-over. Fig. 4 is a detail perspective view of one of the gravity or automatic locks.

Similar letters of reference indicate corresponding parts in all the figures.

Referring to the drawings by letters, A represents the trolley-wire cross-over, which is attached to the underside of the trolley wires where they cross each other, as shown in Fig. 1, in any suitable manner. B, B′ are channels in said guide or cross-over A, which cross each other at any angle desired.

The central portion of the guide or cross-over A is bulged or curved downward, as shown at *b*, Fig. 2, for a purpose hereinafter stated.

C, C′, are suitable locks or guards consisting of the pieces *c*, *c′*, and the cross-heads or guards c^2, c^3, thereon. The cross-heads or guards are set at proper angles to the pieces *c*, *c′*, the angle at which they are set being the same as the angle at which the wires upon which they are to be used cross each other.

The lock or guard has upon the forward end or face of the cross-head a bead or flange for a purpose hereinafter stated. The upper part of said guard or cross-head is provided with a groove or channel *f* for the purpose of receiving one of the wires when the cross-head is thrown up by the passage of the trolley. The lower or under parts of the pieces *c*, *c′*, have a downward curve as shown at *d*, so that when the trolley leaves the line wire and passes onto the said piece *c*, or *c′*, the guard or cross-head will be thrown much higher than would be the case were the under sides of the said pieces straight, so that the cross-head or guard will be thrown out of the way of the trolley wheel, as is evident.

At each end of the grooves in the cross-over are placed guides E, E, for the purpose of running the trolley on and off the line wires. One end of each of the grooves is cut out from the line of the side of the groove that crosses it to within a short distance of its outer end, as shown, and one of the locks or guards C, or C′, having the proper angle to form a portion of the side of the groove that crosses the one in which it is placed, is hinged

therein in any proper or suitable manner, as shown in Figs. 2 and 3. The bead or flange upon the forward face of the cross-head will rest upon the upper side of the curved or bulged portion *b*, and prevent the said lock or guard falling from its position in the cross-over, as shown in Fig. 2. The hinged ends of these locks or guards are in line with the guides E, E, so that the trolley will readily pass therefrom upon the said locks, as is evident.

The operation of this device is as follows: The trolley will pass from the line wire upon one of the guards E, under the piece *c* of the lock or guard C, and by its upward pressure throw the said hinged lock upward and will then pass therefrom upon the downwardly bulged portion *b*. At this point in the cross-overs heretofore used the trolley could take either the groove B or the groove B′, as there was nothing to prevent its so doing. In my improved cross-over this cannot be, as the trolley when it reaches this point finds the groove B′ closed by the guard or cross-head of the lock C′, and will be guided on in its proper groove, over the guide E and out upon the line wire. The lock or guard C′ is operated in the same manner. When the trolley has passed out from under the lock it will fall by gravity back into position, so that the front of the cross-head thereof will form a part of the wall of the groove that crosses the one in which it is hinged.

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

1. A cross-over for trolley wires having the central depression *b* therein and having portions of the grooves B and B′ cut away, locks or guards hinged or otherwise set in the cut away portions of said grooves, and adapted to be raised by the passage of a trolley thereunder, as set forth.

2. A cross-over for trolley wires having a central depression *b* therein and having portions of the grooves B and B′ cut away, locks having the cross-heads or guards thereof so set as to form part of the wall of the groove that crosses the groove in which the said lock is set, as set forth.

3. A cross-over for trolley wires having a central depression *b* therein and having portions of the grooves B and B′ cut away, locks or guards hinged or otherwise secured in the cut away portions of said grooves adapted to be raised by the passage of the trolley thereunder and when the trolley passes to return to its normal position, and means on the said lock to retain it in position in the cross-over, as set forth.

4. A cross over for trolley wires having a central depression *b* therein and having a portion of the grooves B and B′ cut away, locks having the cross-heads or guards thereof so set as to form part of the wall of the groove that crosses the groove in which the said lock is set, and the pieces *c*, *c*′, of the said locks C, C′, having their under sides curved down, as and for the purpose set forth.

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

JOHN KROGER.

Witnesses:
WM. LEINBACH,
JOHN VANGEZELL.