F. J. NOLAN.

SAFETY GUARD FOR TROLLEY WHEELS.

APPLICATION FILED SEPT. 13, 1907.

**901,027.** **Patented Oct. 13, 1908.**

*Fig. 1.*

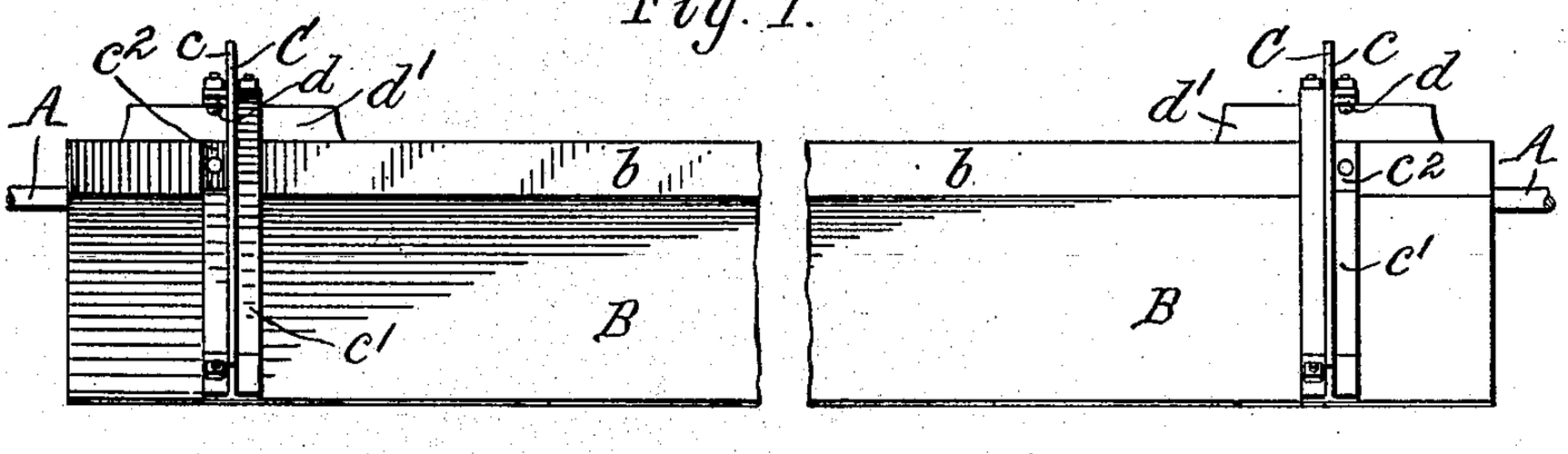



*Fig. 2.*

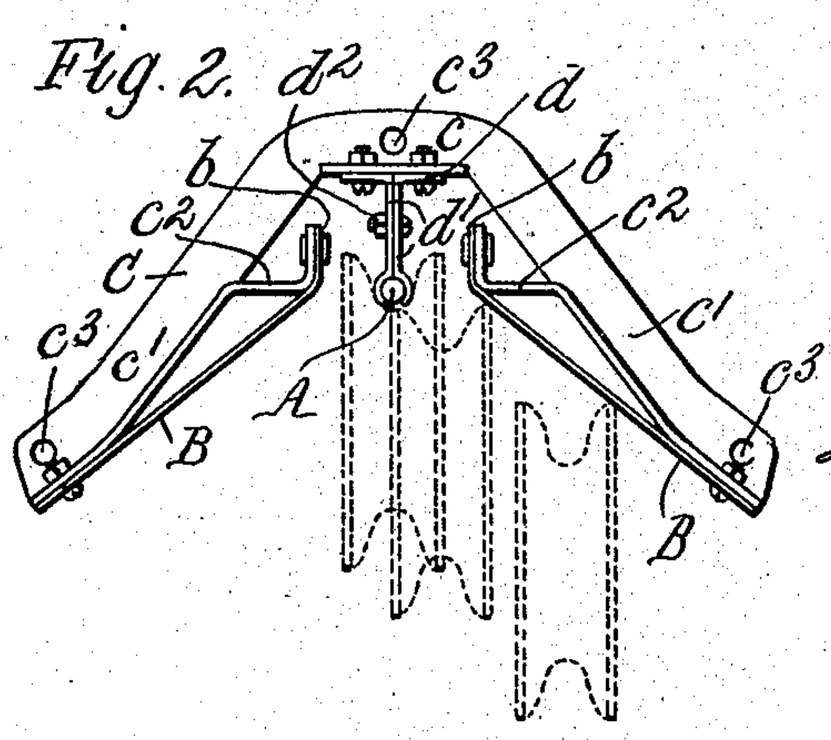



*Fig. 3.*

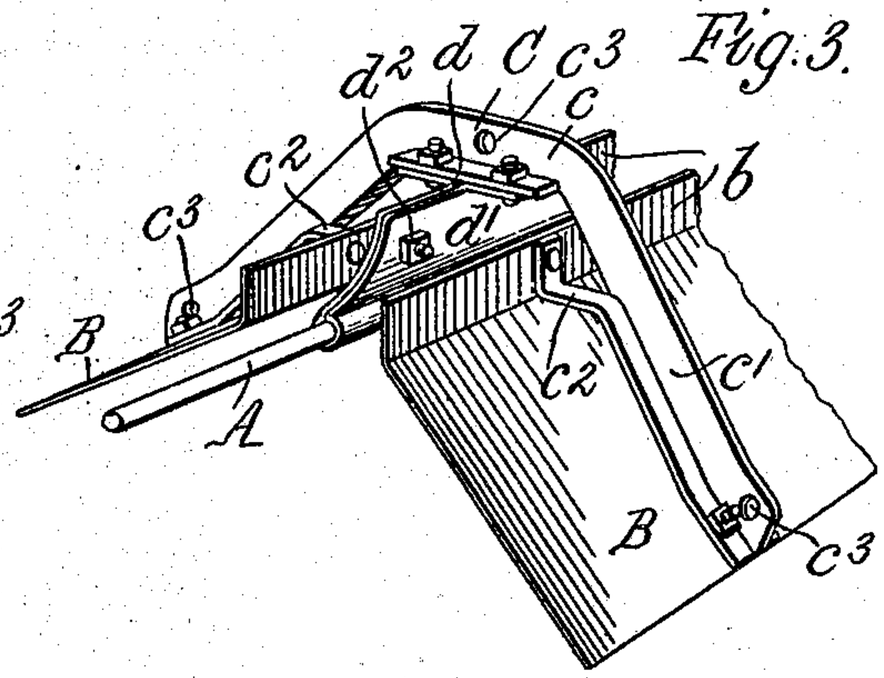
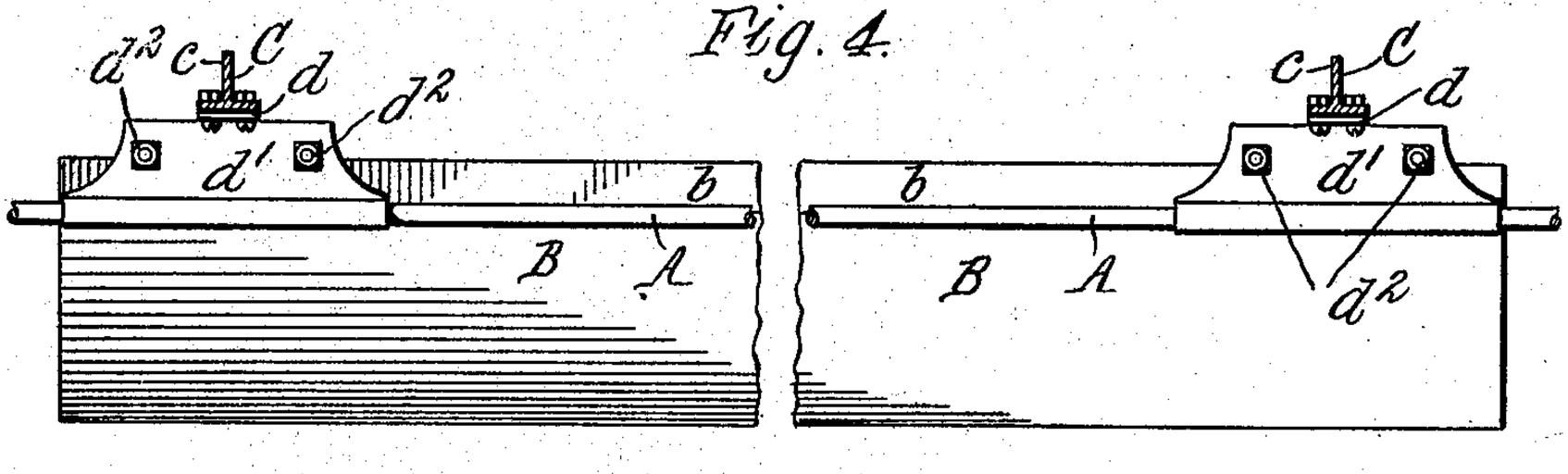



*Fig. 4.*

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# UNITED STATES PATENT OFFICE.

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## SAFETY-GUARD FOR TROLLEY-WHEELS.

No. 901,027. Specification of Letters Patent. Patented Oct. 13, 1908.

Application filed September 13, 1907. Serial No. 392,633.

*To all whom it may concern:*

Be it known that I, FRANK J. NOLAN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Safety-Guards for Trolley-Wheels, of which the following is a specification.

This invention relates to improvements in safety guards for use on overhead trolley electric railways for catching the trolley and supplying current thereto in case it leaves the wire, and has reference more particularly to those guards of this character which not only catch the trolley when it leaves the wire but also causes the same to return automatically to its proper position upon the trolley wire. A guard of this character is described in my U. S. application filed Nov. 26, 1906, Serial No. 345,116, in which the guard consists of an inverted trough of perforated sheet metal suspended above the trolley wire and having converging side portions and a top pocket portion from which the trolley wire is suspended.

The object of this invention is to improve the construction of these guards by producing a guard having imperforate side portions upon which the trolley travels when it leaves the wire, whereby a smooth contact surface is afforded the trolley, and having between the upper edges of the side portions an uncovered and unobstructed opening through which the exhausts from locomotives passing under the guard can readily escape without unduly heating and warping the imperforate side portions of the guard.

A further object of the invention is to provide a guard which can be economically manufactured and will be light in construction and at the same time sufficiently rigid so that the imperforate sides thereof will at all times retain their proper position adjacent to the trolley wire.

In the accompanying drawings: Figure 1 is a side elevation of a trolley guard embodying the invention. Fig. 2 is an end elevation thereof, showing in broken lines the trolley wheel in different positions thereon. Fig. 3 is a perspective view of one end thereof. Fig. 4 is a longitudinal sectional elevation of the same.

Like letters of reference refer to like parts in the several figures.

A represents the trolley wire, and B B the side pieces or wings of the trolley guard which are arranged lengthwise of the wire on opposite sides thereof. These side pieces slope or converge upwardly toward the trolley wire and terminate at about the horizontal plane thereof so as to leave, between their upper corners, an intervening uncovered opening which extends lengthwise of the guard and in which the trolley wire is centrally located. At their upper edges these side pieces are preferably provided with vertically extending flanges *b b* which serve to stiffen and strengthen them.

C C represent connecting yokes for the side pieces of the guard arranged at each end thereof and, if necessary, at suitable intermediate points. They are preferably formed of T-bars or other flanged bars and have a horizontal top or central portion *c* and inclined legs *c'* extending to the outer lower edges of the side pieces B to which they are bolted or otherwise suitably secured. Portions of the flanges of the inclined legs of the yoke extend inwardly to form braces $c^2$ which are secured to the flanges *b* of the side pieces B by bolts, or in any other suitable manner, and serve to stiffen these sides and prevent the same from being bent out of position by contact with the trolley wheel when it leaves the wire. Suitable holes $c^3$ are provided in the center and at the ends of the yokes C, or other provision is made for the attachment of the usual insulated supporting and stay wires (not shown) for suspending the trolley guard in position over the trolley wire.

The trolley wire may be suspended from the yokes C in any desirable manner. In the construction shown, supporting clips *d* are bolted or otherwise suitably secured to the central portion *c* of the yokes, and have depending plates or portions *d'* which embrace the wire A on opposite sides thereof and are drawn together to clamp the wire firmly between them by bolts $d^2$ which connect these plates above the wire.

The supporting means for the trolley wire are such that the trolley wire is suspended from the yokes centrally in the open space between the side pieces of the guard and in substantially the horizontal plane of the upper corners of the inclined portions of the side pieces, the horizontal distance between the wire and the side pieces being sufficient to allow the trolley wheel to travel on the

wire without coming into contact with the side pieces, but being less than the width of the trolley wheel so that the wheel is prevented, when it leaves the wire, from entering the space between the wire and either side piece of the guard.

The side pieces or wing portions B are preferably made of imperforate sheet metal whereby the trolley, when off the wire, has a smooth surface upon which it travels and a continuous or unbroken contact is maintained between the same and the trolley. If desirable, however, these plates could be perforated to lighten the same or for any other purpose.

By providing an uncovered opening between the sides of the guard in which the wire is suspended, considerably less metal is required in making the guard than when the sides are continued to form an inclosed pocket portion about the wire, and a guard of more simple construction is produced which is easily assembled and can be cheaply and economically manufactured. The uncovered opening extending lengthwise in the top of the guard allows the free and unobstructed passage of the hot gases from locomotives through the guard, so that the guard is not affected by the same. When in use, the guard is in electrical connection with the trolley wire. When the trolley wheel slips from the wire, it encounters one of the imperforate sides of the guard along which it travels until it is forced back upon the wire by the upward pressure of the trolley pole.

I claim as my invention:

1. A guard for trolley wheels having upwardly converging side portions separated by an intervening uncovered opening, means for connecting said side portions, and means for supporting the trolley wire in said intervening opening, substantially as set forth.

2. A guard for trolley wheels having upwardly converging side portions of imperforate material separated by an intervening uncovered opening, means for connecting said side portions, and means for supporting the trolley wire in said intervening opening, substantially as set forth.

3. A guard for trolley wheels having upwardly converging side portions separated by an intervening uncovered opening, yokes connecting said side portions, and means on said yokes for supporting the trolley wire in said intervening opening, substantially as set forth.

4. A guard for trolley wheels having upwardly converging side portions separated by an intervening uncovered opening, and provided with upturned flanges adjacent to said opening, means for connecting said side portions, and means for supporting the trolley wire in said intervening opening, substantially as set forth.

5. The combination with a trolley wheel and a trolley wire, of a guard for the trolley wheel comprising separated side pieces or wings arranged on opposite sides of the trolley wire lengthwise thereof and converging upwardly toward said wire, means for connecting said side pieces, and means for supporting said wire between the same, substantially as set forth.

6. The combination with a trolley wheel and a trolley wire, of a guard for the trolley wheel comprising separated side pieces or wings of imperforate material arranged on opposite sides of the trolley wire lengthwise thereof and converging upwardly toward said wire, means for connecting said side pieces and means for supporting said wire between the same, substantially as set forth.

Witness my hand, this 9th day of September, 1907.

FRANK J. NOLAN.

Witnesses:
E. C. HARD,
C. B. HORNBECK.