

No. 894,637.

PATENTED JULY 28, 1908.

L. A. HAWKINS.  
TROLLEY CONTACT.  
APPLICATION FILED DEC. 31, 1907.

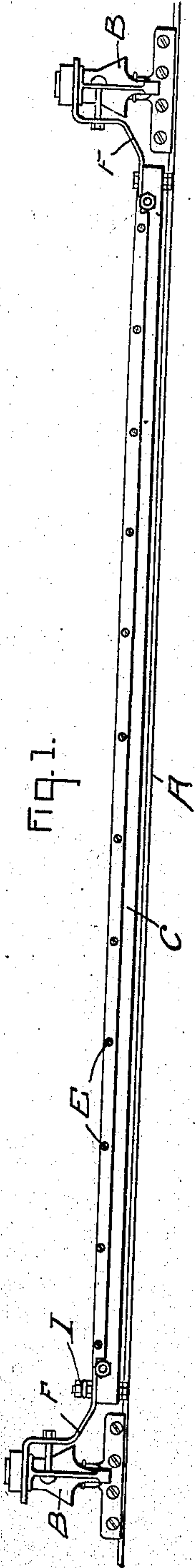


Fig. 1.

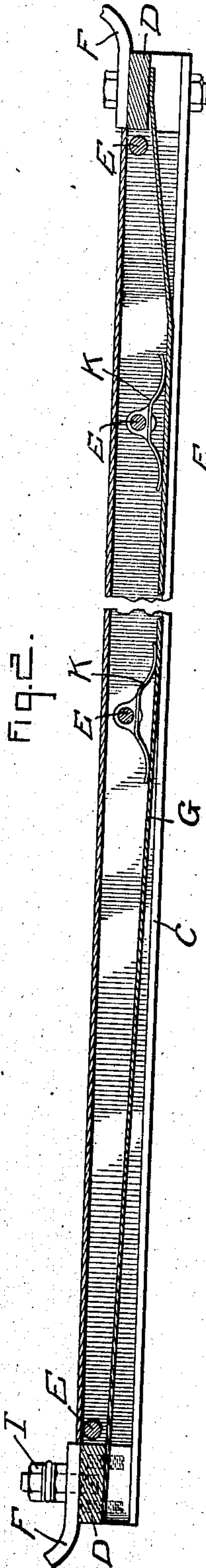


Fig. 2.

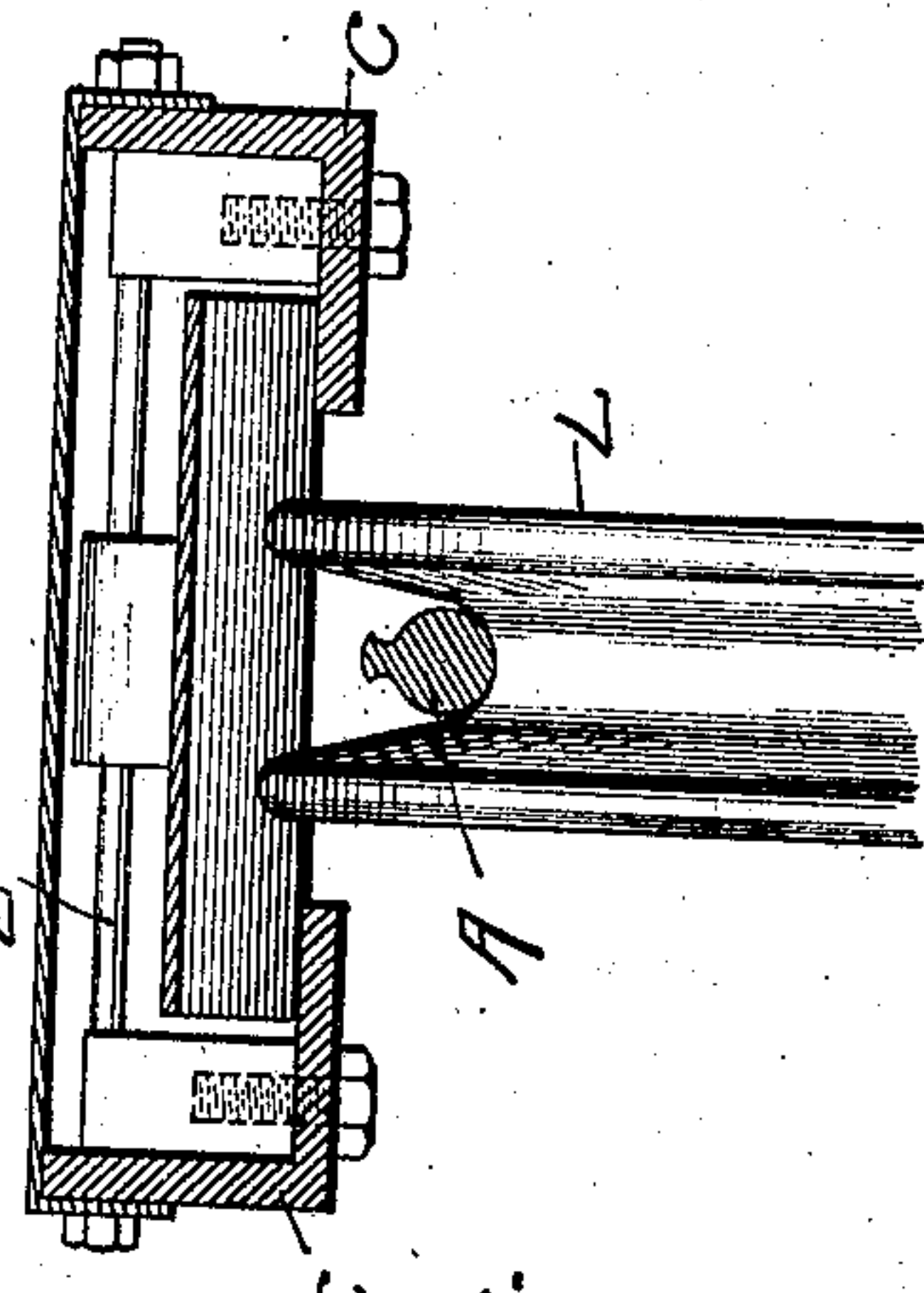


Fig. 4.

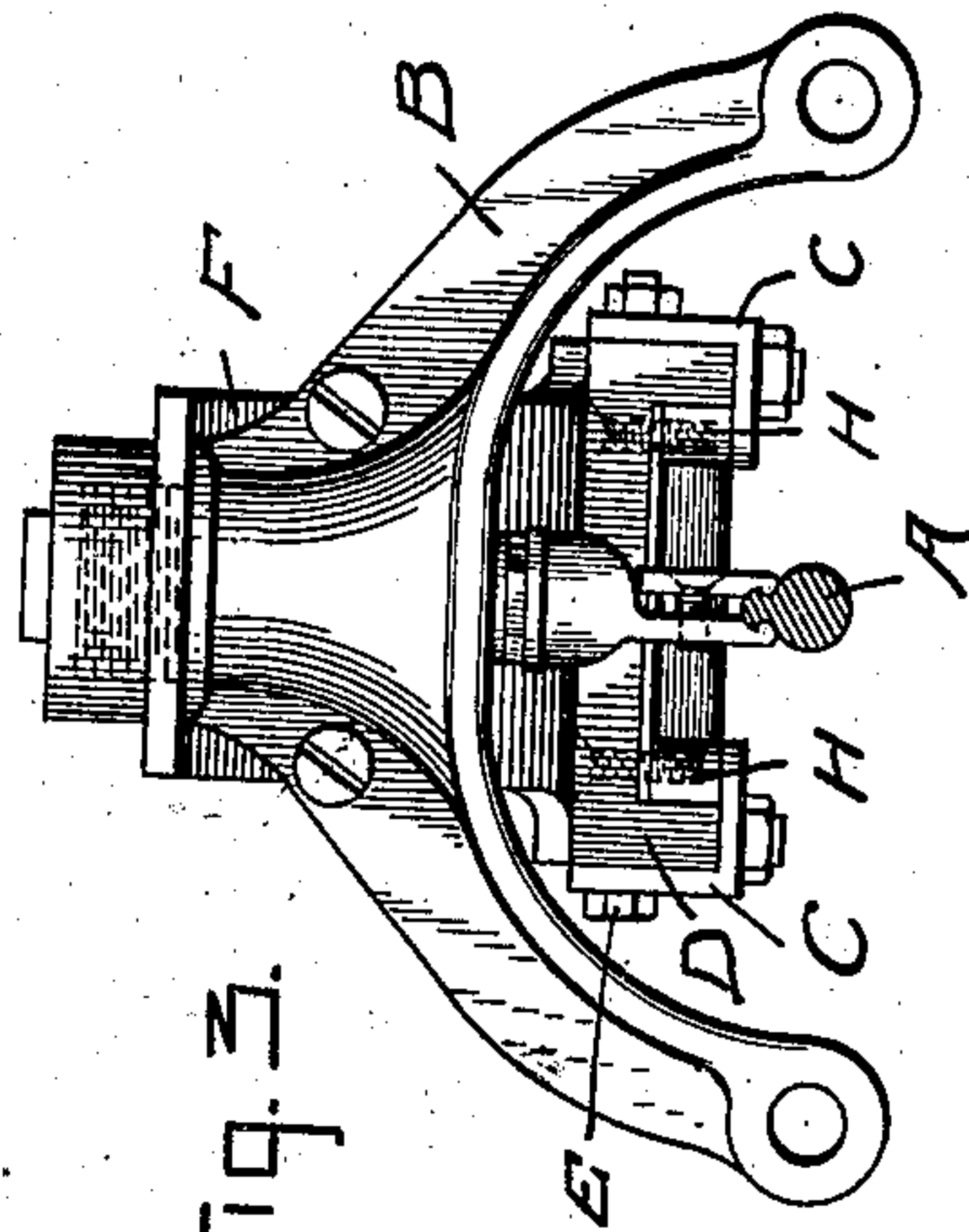


Fig. 3.

WITNESSES

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# UNITED STATES PATENT OFFICE.

LAURENCE A. HAWKINS, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

## TROLLEY-CONTACT.

No. 894,637.

Specification of Letters Patent.

Patented July 28, 1908.

Application filed December 31, 1907. Serial No. 408,764.

*To all whom it may concern:*

Be it known that I, LAURENCE A. HAWKINS, a citizen of the United States, residing at Schenectady, in the county of Schenectady and State of New York, have invented certain new and useful Improvements in Trolley-Contacts, of which the following is a specification.

My invention relates to trolley contacts for use in connection with signal systems on electric roads, and its object is to provide a simple and reliable contact adapted for operation at high speeds. Such a contact must be so arranged that no shock occurs when the trolley strikes it, for otherwise, either the contact would frequently break, or the trolley-wheel would be thrown from the wire. Contact should be preserved for a sufficient length of time for operation of the signal mechanism connected to the contact, and this should be accomplished without moving parts in the trolley contact itself. Consequently, the contact should be of considerable length, and should be of a simple and light construction, so as not to overburden the trolley-wire. The contact should preferably be arranged so that it may be placed in position without cutting the trolley-wire, and parts subject to wear should be easily replaceable.

My invention comprises a novel form of trolley contact in which all the above requirements are met. Broadly stated, my invention consists of a trolley contact comprising a long, flat, flexible, continuous strip of conducting material supported in a horizontal plane directly above but separated from the trolley wire, and adapted to be engaged by the rims of the flanges of a trolley-wheel in passing.

My invention further comprises certain structural features which will best be understood by reference to the accompanying drawings, in which

Figure 1 shows a side elevation of a trolley contact arranged in accordance with my invention; Fig. 2 shows an enlarged cross-sectional side elevation of the same; Fig. 3 shows an end-elevation on the scale of Fig. 2; and Fig. 4 shows a cross-sectional transverse view on a larger scale.

In the drawings, A represents the trolley-wire, and B B insulating ears or hangers of standard construction.

C C represents a pair of supporting mem-

bers in the form of light angle-beams extending parallel to and slightly above the trolley-wire on opposite sides of the wire. These angle-beams are provided at their ends with spacing blocks D, and are fastened together by bolts or rivets E.

F F represents straps secured to the spacing blocks D by means of which the angle-beams are supported from the hangers B.

G represents a thin flexible strip of conducting material, such as hard rolled copper or phosphor-bronze, which, for the greater part of its length, rests on and is supported by the angle-beams C C. At the end of the contact which the trolley-wheel approaches, which is shown as the left-hand end in Fig. 2, the strip G is given a gradually upward incline, and is fastened at its end to the block D by means of clamping blocks H H, shown in Fig. 3. If the contact were intended for use in a place such that it would be traversed by trolley-wheels at high speed in both directions, both ends of the contact could be arranged as the left-hand end is shown in Fig. 2; but if the contact is traversed in one direction only at high speed, the end at which the wheel leaves may be, and preferably is, left free to move horizontally, as shown at the right-hand end of Fig. 2, since with the strip secured against horizontal movement at one end only, all tendency to buckle is avoided. Although the outgoing end of the strip G is not fastened, it is preferably given an upward incline, as shown at the right-hand end of Fig. 2, so that a trolley-wheel may pass over it from right to left, without any danger of damaging the contact strip, and also so that there will be no tendency for the right-hand end of the strip to flap when the trolley-wheel passes over it rapidly from left to right. A binding-post I may be secured to the block D, to which the strip G is fastened, so as to conduct the current from the strip G to the signal mechanism. For very high speed operation, light springs K K may be used to hold the strip closely in engagement with a passing trolley-wheel.

The operation of the contact will be clear from the above description. The trolley-wheel approaches the contact from the left-hand end, as viewed in Fig. 2, and the rims of its flanges engage the contact strip at a point between the point of attachment of the strip to the spacing block D and the point where the strip first touches the angle-beams C



This point of engagement varies somewhat with the depth of groove in the trolley-wheel. In Fig. 4, a trolley-wheel L is shown entering the contact and about to engage the contact strip. The incline of the strip is made so gradual that no shock occurs when the wheel engages the strip, even at very high speeds. The strip is so light that the wheel raises it easily, without any liability of being pushed down from the trolley-wire, and so flexible that the strip maintains engagement with the rims of the flanges, while the wheel is passing under it.

The contact is sufficiently light so that it may be made of considerable length, without overburdening the trolley-wire, in order to obtain a period of contact of appreciable duration even at the highest speeds. The only part of the contact subject to wear is contact strip G, which can very readily be renewed.

I do not desire to limit myself to the particular construction and arrangement of parts here shown, but aim in the appended claims to cover all modifications which are within the scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is

1. A trolley contact comprising a long, flat, flexible, continuous strip of conducting material supported in a horizontal plane directly above but separated from the trolley-wire and adapted to be engaged by the rims of the flanges of a trolley-wheel in passing.
2. A trolley contact comprising a long, flat, flexible, continuous strip of conducting material supported in a horizontal plane directly above but separated from the trolley wire and adapted to be engaged by the rims of the flanges of a trolley-wheel in passing, said strip being bent upward in a gradual incline at the end which the trolley-wheel approaches.
3. A trolley contact comprising a long, flat, flexible, continuous strip of conducting material supported in a horizontal plane directly above but separated from the trolley-wire and adapted to be engaged by the rims of the flanges of a trolley-wheel in passing, said strip being bent upward at both ends but secured against horizontal movement at one end only.
4. A trolley contact comprising a long, flat,

flexible, continuous strip of conducting material supported in a horizontal plane directly above but separated from the trolley-wire and adapted to be engaged by the rims of the flanges of a trolley-wheel in passing, said strip being bent upward in a gradual incline at the end which the trolley-wheel approaches and secured against horizontal movement at that end only.

5. A trolley contact comprising supporting members extending parallel to and slightly above the trolley-wire on opposite sides thereof, and a long, flat, flexible, continuous strip of conducting material resting on said members and adapted to be engaged by the rims of the flanges of a trolley-wheel in passing.

6. A trolley contact comprising supporting members extending parallel to and slightly above the trolley-wire on opposite sides thereof, and a long, flat, flexible, continuous strip of conducting material resting on said members and adapted to be engaged by the rims of the flanges of a trolley wheel in passing, said strip being bent upward in a gradual incline at the end which the trolley-wheel approaches.

7. A trolley contact comprising supporting members extending parallel to and slightly above the trolley-wire on opposite sides thereof, and a long, flat, flexible, continuous strip of conducting material resting on said members and adapted to be engaged by the rims of the flanges of a trolley-wheel in passing, said strip being bent upward in a gradual incline at the end which the trolley-wheel approaches, and secured at that end against horizontal movement.

8. A trolley contact comprising supporting members extending parallel to and slightly above the trolley-wire, on opposite sides thereof, and a long, flat, flexible, continuous strip of conducting material resting on said members and adapted to be engaged by the rims of the flanges of a trolley-wheel in passing, and insulating hangers supporting said members at the ends.

In witness whereof, I have hereunto set my hand this 30th day of December, 1907.

LAURENCE A. HAWKINS.

Witnesses:

BENJAMIN B. HULL,  
HELEN ORFORD.