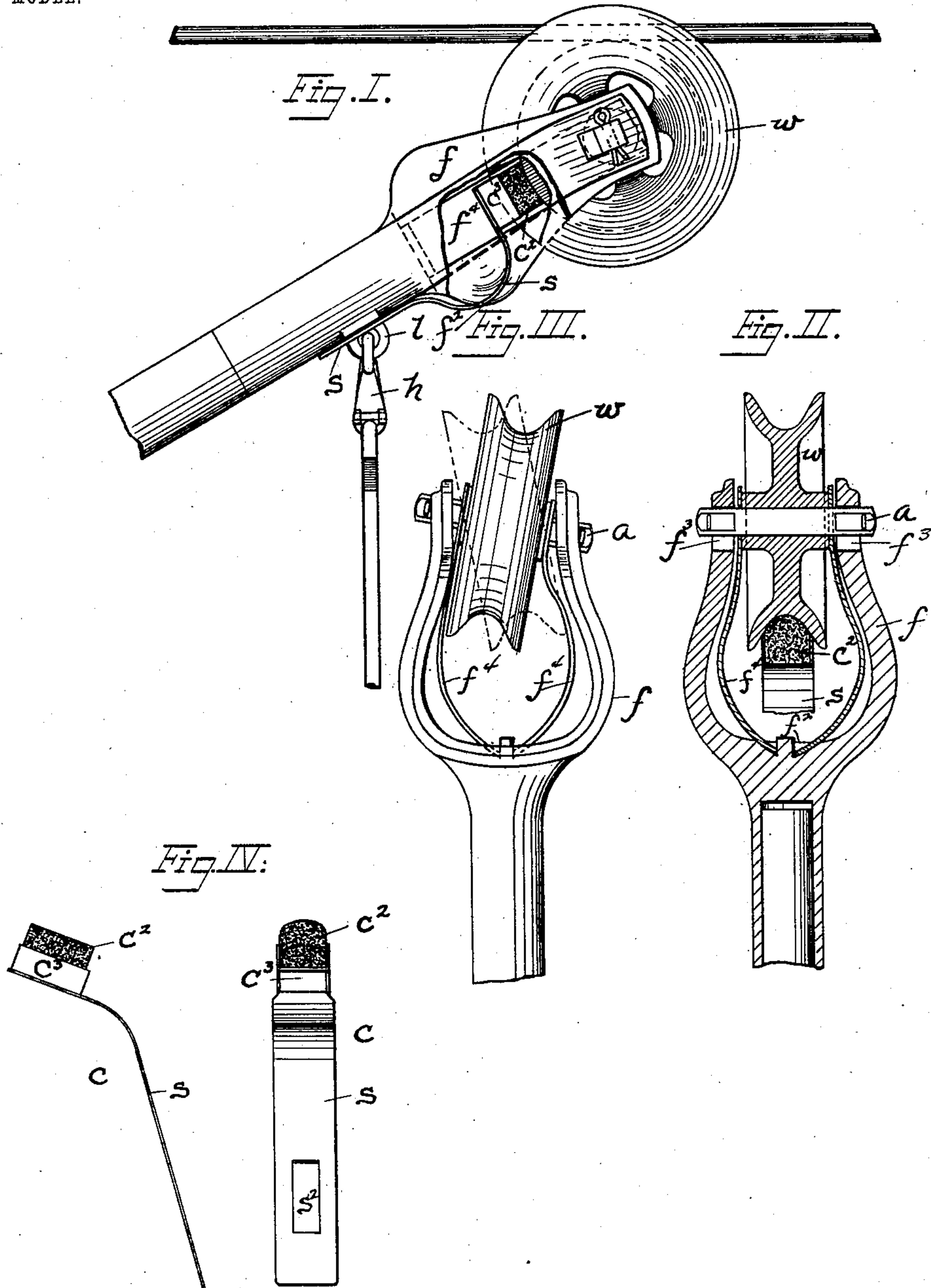


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PATENTED OCT. 27, 1903.

W. L. BAKER.
TROLLEY CONTACT DEVICE.
APPLICATION FILED DEC. 29, 1902.

NO MODEL.



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TROLLEY CONTACT DEVICE.

SPECIFICATION forming part of Letters Patent No. 742,378, dated October 27, 1903.

Application filed December 29, 1902. Serial No. 136,962. (No model.)

To all whom it may concern:

Be it known that I, WALLACE L. BAKER, a citizen of the United States of America, and a resident of Painesville, in the county of Lake and State of Ohio, have invented certain new and useful Improvements in Trolley Contact Devices, of which the following is a specification.

My invention relates to improvements in a trolley contact device, and has for its object the provision of a simple, efficient, and serviceable device of this character and one which is easily adjusted in position and renewed.

By reason of the decidedly unfavorable conditions under which a rapidly-moving trolley device must operate in conveying current from the trolley-wire and also because of the relatively heavy currents employed it has been the common experience that the inner contacts of a trolley are an unfailing source of trouble. Numerous attempts are recorded wherein the solution of the problems presented has been sought with more or less success, and my present invention aims to avoid the disadvantages inherent in prior devices of this character.

Where metal springs are employed to conduct the current from the rapidly-revolving trolley-wheel to the frame or harp, and particularly when these springs engage the edge or periphery of the wheel, said springs rapidly wear away or become fused or injured in use. Hence a contact device of this kind requires frequent attention and renewal. Two principal reasons for this may be mentioned, first of which is the tremendous speed at which the highly-charged wheel is driven and the other the roughened or scored surface presented by the exterior of a trolley-wheel, which necessarily results from the heavy sparking or discharges to which a wheel must be subjected in use. A trolley-wheel after a short time is very apt to cut or saw off very rapidly metal springs or contact-brushes bearing peripherally thereon in the most effective position to take current from the wheel or to damage its sleeve or bearing by interior sparking because of imperfect contact between the frame or harp and said wheel. Contact-springs, too, not properly positioned are very liable to be damaged or destroyed by the continual pounding and

hard usage to which a trolley of necessity is subjected. Keeping these unfavorable conditions in mind, I have sought to meet them in a contact device for trolleys which I shall now explain, first in a preliminary way by stating that it comprises a spring-mounted block of carbon preferably forced within the groove of the trolley-wheel by such spring and so disposed upon and within the trolley-frame or harp as to be entirely protected from damage. Furthermore, as I shall explain, it may be a separate appliance readily adjusted or mounted upon any trolley-frame to act wholly or in part in carrying or conveying the current between the wheel and harp or other conducting part.

The preferred embodiment of my invention will be explained more particularly by referring to the accompanying drawings, wherein—

Figure I is a side elevation of the trolley device, a portion of the harp and wheel being broken away to further the illustration of my improvements. Fig. II is a sectional view of the trolley wheel and frame. Fig. III is a plan view thereof, the contact appliance being removed in order to show more clearly the automatic adjustment of the wheel within the frame; and Fig. IV shows in side and plan views the particular contact appliance before being placed upon the trolley.

Similar parts in the drawings have been designated by the same characters of reference.

The frame *f* and trolley-wheel *w* may be of practically any approved style or type, though I have chosen to set forth my invention in connection with a harp or frame having certain distinctive features wherein my contact device is employed with especial advantage. Fig. I shows the several parts in position to take current from the trolley-wire, the frame and wheel, however, being partially broken away upon one side to show fully the contact device *c* with its carbon block *c*² in operative position engaging both the harp or frame and the groove of the trolley-wheel. This contact device is seen to consist of a spring portion *s*, bent to fit upon and within the frame, whereon it is secured by means of the usual lug *l*, which registers with the slot *s*², cut in the outer portion of the spring, upon which lug the device is sprung into place and fastened by the ordinary snap-

hook *h*, forming the terminal of the trolley-rope. Instead the device may of course be riveted or otherwise attached to the harp or other conducting part, if desired. The inner end of said spring is formed or provided with a receptacle or casing *c*³, wherein the carbon block or brush *c*², forming the bearing-face for said device, is removably inserted and closely held. Very soon said block will in use be conformed to the face or contour of the groove, being held firmly against the wheel by the spring, which extends up between the limbs of the frame and is forcibly flexed against the lower edge of the harp, as at *f*², thus making excellent contact therewith at this point, as well as lower down upon the frame in position adjacent to the lug. Disposed as it is, the spring, through the normal rotation of the trolley-wheel, is naturally drawn into close engagement with the frame, insuring the best of electrical connection between the united parts, and thus doing away with the observed tendency to interior sparking in the device and consequent impairment or destruction of the bearing parts of said trolley-wheel.

I prefer to employ a moderately soft grade of carbon for the bearing-face *c*² of the contact device, which has the characteristics of a self-lubricant and affording a relatively large current taking or engaging surface for the wheel, which it bears upon in its cleanest and smoothest portion. Such carbon in practice will be found to last a surprisingly long time. The block *c*², however, costs but little and may be very easily and cheaply replaced, as required. Indeed, my entire contact device costs but a trifle and may economically be renewed entire, if desired. The carbon of course is not fused by heavy discharges and forms an excellent contact part for engaging the wheel and taking the current therefrom rather than through the other portions of the trolley device.

The illustrated mode of mounting the trolley-wheel is distinctive in that the slots or ways *f*³, provided in the terminal limbs of the frame, afford or permit an automatic adjustment for said wheel within its frame whereby curves or other irregular portions of the trolley-wire are readily accommodated by the movement of the wheel. Lateral springs *f*⁴, braced within the frame and bearing upon the axle-pin *a*, normally retain the wheel centered within said frame, the axle-pin thus being seated rearwardly in the slots or ways. Fig. III shows in full and dotted lines the wheel in its extreme positions of adjustment for accommodating curved portions of the trolley-wire.

With a wheel somewhat loosely hung and having such wide play or range of adjustment within its frame, as described, the problem of providing satisfactory contact between said wheel and its frame or other conducting part ordinarily is made much more difficult. Equipped with my improved trolley contact

device, however, the difficulty is overcome, since the spring portion thereof is sufficiently free and flexible to maintain the electrical engagement of the carbon block with the groove of the wheel in the various positions assumed thereby.

The disposition of the contact device within and beneath the trolley-frame as set forth is preferable, since no damage is at all likely to be occasioned by accidents to the trolley, it being fully protected by the frame.

My improved contact device is readily applied to or adjusted upon widely-different types of trolley devices. Hence its adoption does not require any change in the equipment of most trolley-railroads, while securing decided improvement in the operation and increasing the life of such trolley devices.

Having now set forth the preferred embodiment or application of my invention, I claim as new, and desire to secure by Letters Patent, the following:

1. In a trolley device, the combination with the harp or frame, of the trolley-wheel rotatably mounted therein, and a removable contact device comprising a spring portion fitting closely upon the harp or frame and having a relatively deep recess or receptacle disposed between the limbs of the frame, and a carbon contact-piece mounted therein and engaging the groove of the trolley-wheel, substantially as set forth.

2. In a trolley device, the combination with a harp or frame, of a trolley-wheel rotatably mounted therein, and an intermediate contact device electrically uniting the said parts, comprising a spring portion shaped to fit within and upon the harp or frame and having a relatively deep recess or receptacle provided thereon, and a carbon contact-piece or bearing-face removably mounted in said receptacle, held in position by the spring to engage the grooved portion of the trolley-wheel, substantially as set forth.

3. In a trolley device, the combination with the harp or frame, of the trolley-wheel rotatably mounted therein, and an inner contact device electrically uniting the wheel and frame-contact, comprising a spring portion and a suitable bearing-face or brush carried thereby, said device being mounted upon the lower portion of, or beneath the frame with its bearing-face engaging the trolley-wheel in position to insure the closer electrical engagement of the device with the frame-contact during the normal rotation of the wheel, substantially as set forth.

4. In a trolley device, the combination with the harp or frame, of the trolley-wheel rotatably mounted therein, and an attachable inner contact device electrically uniting the wheel and frame-contact; comprising a flat spring portion provided with a suitable receptacle and a carbon block or brush mounted therein; the same being removably mounted upon the lower portion of, or beneath the frame and secured to the depending lug with

its brush extending up between the arms of the frame and bearing upon the groove of the trolley-wheel, whereby better electrical connection of the parts is insured during the
5 rotation of said wheel, substantially as set forth.

Signed at Cleveland, this 24th day of De-

cember, 1902, in the presence of two subscribing witnesses.

WALLACE L. BAKER.

Witnesses:

E. M. GOLDING,

ALBERT LYNN LAWRENCE.