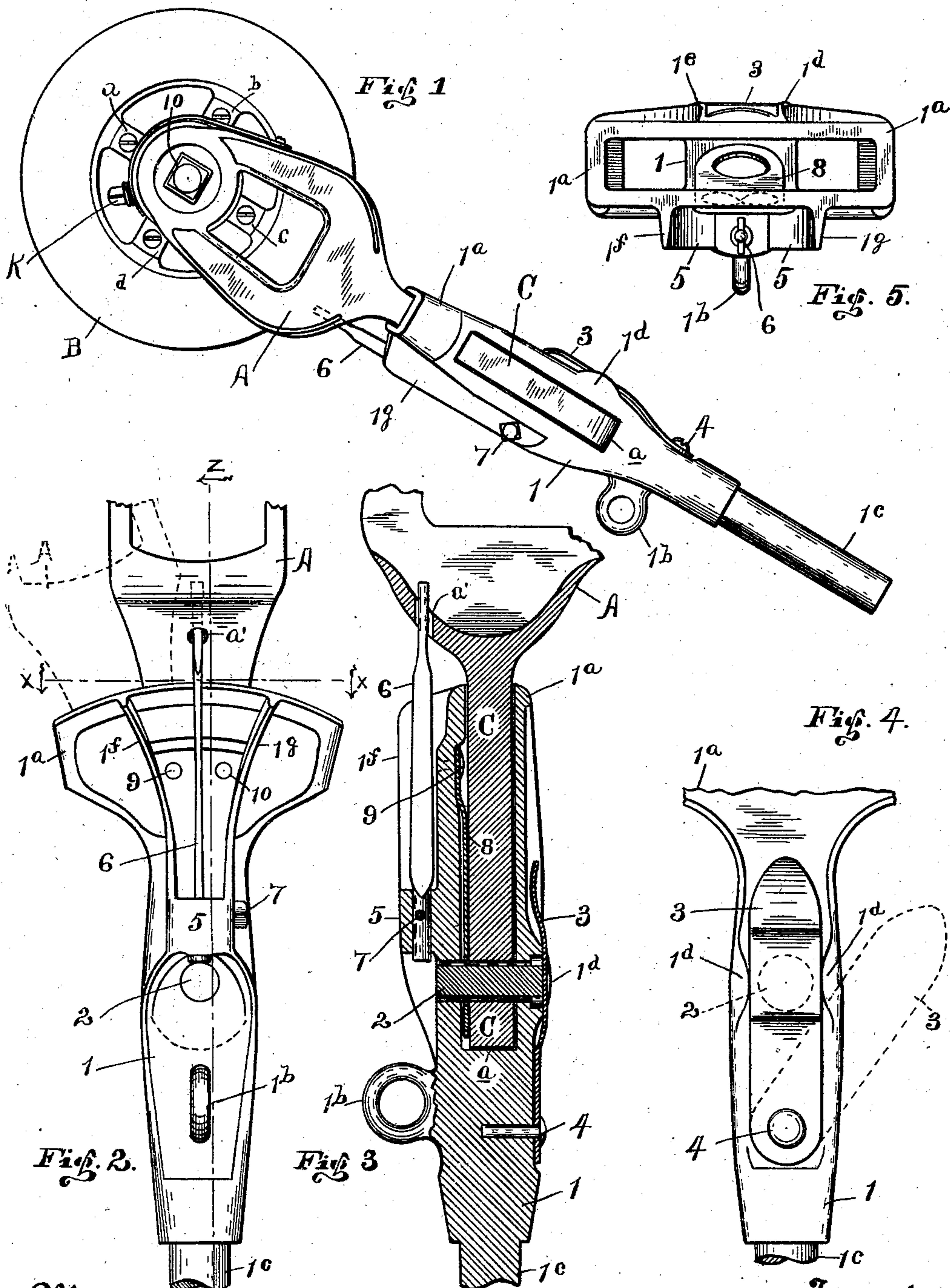


No. 860,114.

PATENTED JULY 16, 1907.

C. E. ATKINSON.  
TROLLEY HARP.

APPLICATION FILED OCT. 20, 1906.



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# UNITED STATES PATENT OFFICE.

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## TROLLEY-HARP.

No. 860,114.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed October 20, 1906. Serial No. 339,751.

*To all whom it may concern:*

Be it known that I, CHARLES E. ATKINSON, a citizen of the United States, residing in Richmond, in the county of Wayne and State of Indiana, have made new and useful Improvements in Trolley-Harps, of which the following is a true and accurate specification, being such as will enable others skilled in the art to which this invention relates to make and use the same with absolute exactitude.

10 This invention relates to trolley-harps to be carried on the upper end of trolley-poles for electric cars or the like; and the object of this invention, broadly speaking, is the provision of a trolley-harp of simple and inexpensive construction which will readily permit of the  
15 necessary lateral movements of the trolley-wheel carried thereby whereby the danger of the trolley-wheel becoming disengaged from the overhead trolley wire will be reduced to a minimum, at the same time providing for the necessary electrical contacts, and at the  
20 same time providing means whereby all of the parts will be easily accessible and without danger of their inadvertent displacement in operation.

Other particular objects and advantages will be made apparent in the course of the ensuing specification, and  
25 the particular features which are new will be pointed out in the appended claims.

The preferred embodiment of my invention is shown most clearly in the accompanying drawings forming a part of this specification, in which—

30 Figure 1 shows a side elevation of my invention in operative position, together with the trolley-wheel carried thereby; Fig. 2 shows an underside plan view of my invention; Fig. 3 shows a vertical sectional view of my invention, as if taken on the line Z—Z of Fig. 2;  
35 Fig. 4 is a plan view of the upper side of the body portion of the invention; and Fig. 5 is a plan view, partly in section, showing the upper end of the body portion, as if taken on the line X—X of Fig. 2 looking in the direction indicated by the arrows on said line.

40 Similar indices denote and refer to like parts throughout the several views of the drawings.

In order that my invention and its operation may be more readily understood I will now take up the detail description thereof in which I will describe the several  
45 parts and the operations as briefly and as compactly as I may.

50 The numeral 1 designates the body portion or shank of the invention, having the outwardly and laterally flaring head 1<sup>a</sup> integral therewith and extending outward an equal distance on each side. The face of said head is formed in the segment of a circle and with a slot therein, as shown in Fig. 5, which slot extends entirely through said head, in the direction of the body, and then extends down approximately two-thirds of

the length of the body or shank, that is to say,—to the point marked *a*, shown in Figs. 1 and 3, said slot extending entirely through the body laterally as shown.

Extending down from the underside of the body 1, and located near said point *a*, is the eye 1<sup>b</sup>, also integral with the body,—said eye affording means for the attachment of a cord or the like in the usual manner. Extending downwardly and longitudinally from the end of the body 1 is the stem 1<sup>c</sup> which may be secured in a trolley-pole, not shown.

Extending laterally through the body 1, at right angles to said slot in the body, and through the lower portion of said slot, is an aperture for the headed pivot-pin 2, having its head countersunk in the upper side of the body, as shown in Fig. 3. This pivot 2 is removably secured in place by the flat-spring 3, the latter being pivoted lower down to the body 1 by the rivet 4 as shown. When placed against the head of the pivot pin 2, as in Figs. 1 and 3, said spring is prevented from accidentally turning to either side by the lugs 1<sup>d</sup> and 1<sup>e</sup>, as shown in Fig. 3, or it may be sprung out to clear said lugs and then turned to one side, as shown by the dotted lines in Fig. 4, at which time said pivot-pin may be removed. Extending out from the underside of the body 1, immediately above the pivot-pin 2, is the lug 5 having an aperture therethrough parallel with the body for the spring 6, said spring being securable in said aperture by the set-screw 7. Flanges 1<sup>f</sup> and 1<sup>g</sup> project out from the body 1, extending from the lug 5 flaringly upward to the segmental face of the head 1<sup>a</sup> as shown in Fig. 2. The body of said spring 6 is flat, its lower end being round to fit in the aperture in the lug 5, and its upper portion extends above the head 1<sup>a</sup>, this upper portion being rounded for the purpose presently appearing.

The numeral 8 denotes a flat contact spring lying entirely within the slot of said body and head and being countersunk into one side thereof as shown in Fig. 3. Said spring is secured at its upper end by the rivets 9 and 10, as shown in Figs. 2 and 3. Said spring 8 has an aperture therein near its lower end to receive the pivot-pin 2, said aperture and the normal position of said spring being shown in Fig. 5.

The letter A designates the harp proper, in which is mounted the wheel B as in Fig. 1. Integral with and extending downwardly from the harp A is the arm C, rectangular in cross section, as shown in Figs. 1 and 3. Said arm C is of a thickness such as to neatly fit the slot in the head 1<sup>a</sup> and the body 1 as indicated; being of a width substantially the same as the portion of said slot in the body 1 and being of a length such as to extend from the harp A down through the head to the bottom of the slot, that is to say,—to the point *a*, its lower end being rounded as indicated. When the arm



C is in the position shown in the drawings there is an aperture formed through its lower portion in position to receive the pivot-pin 2 as shown.

In inserting the arm C into position it is apparent that it will crowd back the spring 8 to the position shown in Fig. 3, and also that after the pivot-pin 2 has been inserted therethrough then said arm C, together with the harp proper, may have a lateral movement, being pivotally mounted on the pin 2, within the limits of the slot in the head 1<sup>a</sup>, as indicated by the dotted lines in Fig. 2.

An aperture *a'* is formed in the outwardly diverging portion of one side of the harp A to readily receive therein the upper end of the spring 6, as shown in Figs. 1, 2, and 3, by means of which, and the spring 6, the harp A and the arm C are normally and resiliently retained parallel with the body 1, as shown by the drawings.

The flanges 1<sup>f</sup> and 1<sup>g</sup> act as guards to prevent injury to the spring 6; and the spring 8 continuously pressing against the side of the arm C forms a perfect electric contact between the pivoted parts.

From the above it will be notably apparent that I have constructed a mechanism which will effectually compensate and neutralize the vibration and lateral movements of the trolley, which movements are most perceptible when the car to which the trolley is attached is traveling on an uneven track or moving around curves.

I reserve the right to make slight changes and variation in the details of construction without in any manner sacrificing any of the advantages or principles of the invention which are claimed as new.

Having now fully shown and described my invention and the best means for its construction to me known at this time, what I claim and desire to secure by Letters Patent of the United States, is—

1. A trolley-harp, comprising in combination, a body or shank having a laterally enlarged head with a slot formed through said head and extending down into said body, a harp proper having a downwardly extending arm, said arm being pivoted at its lower end in said slot of the body, a spring upon the inside of said slot adapted to bear against said arm and a second spring secured to one side of the body and engaging said harp to normally retain the harp and its arm parallel with the body but allowing the harp and body to be moved laterally against

the resiliency of said spring, all substantially as shown and described.

2. A trolley-harp having in combination, a body and a head integral therewith and having a lateral slot extending across and through the head and merging into a slot formed longitudinally of the body, a harp-proper, an arm operative in said slot and formed integral with the harp-proper, said arm being pivoted at its lower end to the body and having its upper portion adapted to be moved laterally within the limits of the slot in the head, and a single flat spring extending up along the side of the body and head and pivoted at its upper end in the harp-proper to retain the harp and its arm parallel with said body, means for guarding said spring, and a spring adapted to bear against the pivot of said arm to hold the same in place, substantially as and for the purpose set forth.

3. A trolley harp having in combination a body and a head integral therewith and having a lateral slot extending across and through the head and merging into a slot formed longitudinally of the body, a harp proper, an arm operative in said slot and formed integral with the harp proper, said arm being pivoted (by a loose headed pivot extending through the walls of the body and the arm) at its lower end to the body, and having its upper portion adapted to be moved laterally within the limits of the slot in the head, a single flat spring extending up along the side of the body and head, and pivoted at its upper end in the harp proper to retain the harp and its arm parallel with said body, and a spring pivoted to the body adapted to bear against the head of the pivot of said arm to hold the pivot in place.

4. A trolley harp having in combination a body and a head integral therewith and having a lateral slot extending across and through the head and merging into a slot formed longitudinally of the body, a harp proper, an arm operative in said slot and formed integral with the harp proper, said arm being pivoted (by a loose headed pivot extending through the walls of the body and the arm) at its lower end to the body, and having its upper portion adapted to be moved laterally within the limits of the slot in the head, a single flat spring extending up along the side of the body and head, and pivoted at its upper end in the harp proper to retain the harp and its arm parallel with said body, a spring pivoted to the body adapted to bear against the head of the pivot of said arm to hold the pivot in place, and means for retaining the last-named spring in its position when bearing against said headed pivot.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

CHARLES E. ATKINSON.

Witnesses:

R. W. RANDLE,  
R. E. RANDLE.