No. 835,728. PATENTED NOV. 13, 1906.

J. HENSLEY.

CONTACT SPRING FOR TROLLEY HARPS.

APPLICATION FILED MAR. 22, 1906.

Fig. 1.

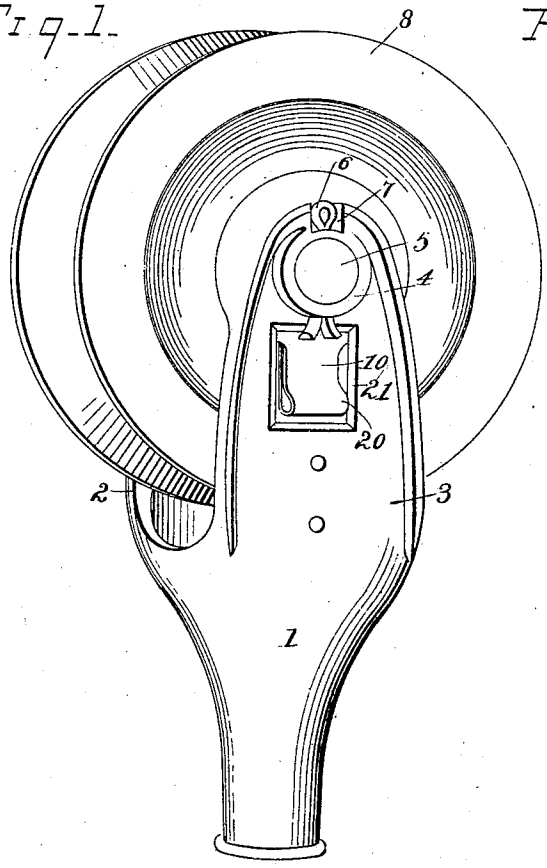


Fig. 2.

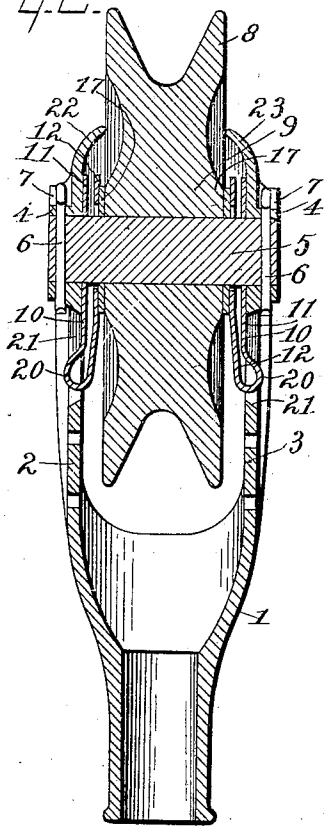


Fig. 3.

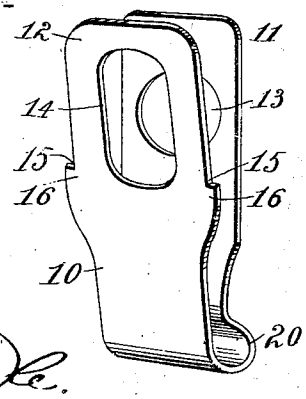
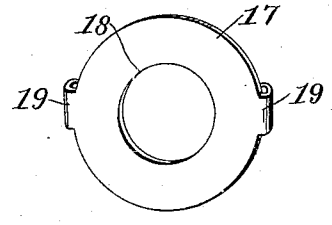


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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CONTACT-SPRING FOR TROLLEY-HARPS.

No. 835,728. Specification of Letters Patent. Patented Nov. 13, 1906.

Application filed March 22, 1906. Serial No. 307,343.

To all whom it may concern:

Be it known that I, JOHN HENSLEY, a citizen of the United States, residing at Huntington, in the county of Huntington and State of Indiana, have invented a new and useful Improvement in Contact-Springs for Trolley-Harps, of which the following is a specification.

My invention relates to improvements in contact-springs for trolley-harps.

The object of my invention is to provide a contact-spring carrying at one end a slidable contact-washer whereby the washer is at all times carried by the spring and is necessarily removed when the spring is removed. This also produces a spring in which there is very little friction; yet the washer forms a perfect contact between the hub of the wheel and the trolley-harp.

Another object of my invention is to provide a spring of this character which has no permanent connection whatever with the harp, yet held against rotation to prevent wear on the spring. This allows the ready removal of the spring and the replacing of a new one when it has become worn.

A further object of my invention is to provide a more simple, cheap, and effective spring to accomplish the above result.

In the accompanying drawings, Figure 1 is a perspective view of a trolley-harp, showing my improved springs applied thereto. Fig. 2 is a transverse vertical sectional view of Fig. 1, and Fig. 3 is an enlarged perspective view of my improved spring. Fig. 4 is an enlarged perspective view of my improved washer.

Referring now to the drawings, 1 represents my improved harp, which is of the usual construction, having the outwardly-extending arms 2 and 3, which are provided at their outer ends with openings 4, in which is mounted the shaft 5. The said shaft is held within the arms against rotation by the cotter-pins 6. The said arms on the outside of said shaft are provided with depressions 7, in which the heads of the cotter-pins are embedded, thus preventing the same from coming into contact with the trolley-wire and being worn thereby. Mounted loosely upon the said shaft 5, intermediate the arms 2 and 3, is an ordinary trolley-wheel 8, the hub 9 of which is of a width less than the distance between the arms 2 and 3, which allows of a transverse movement of the wheel on the shaft, the purpose of which being well understood. In order to keep the wheel centrally located between the arms 2 and 3 and at the same time preform a perfect electrical contact between the hub of the wheel and the trolley-harp, I place my improved spring between the arms and the hub.

The springs 10, as shown in Fig. 3, are approximately V-shaped, both ends 11 and 12 being adapted to receive the shaft of the wheel. The end 11 of the spring is provided with an opening 13, through which the shaft passes, and the said end bearing firmly against the inner face of the harp and forming a good electrical contact therewith. The opposite end 12 of the spring is provided with an elongated opening 14, through which the shaft 5 passes, and said end is normally held inwardly against the sides of the hub of the trolley-wheel. The edges of the said end 12 of the spring are provided with cut-away portions 15, which extend parallel with the elongated opening and are provided at their lower ends with the shoulders 16, the purpose of which will be hereinafter more fully described. Adjacent the inner face of said arm 12 is a washer 17, which is provided with a circular opening 18, through which the shaft 5 passes, and the said washer rests against the outer face of the hub of the wheel and the inner face of the said arm 12, thus forming an electrical contact between the wheel and the harp through the spring. The said washer is provided with ears 19, extending from opposite sides, and said ears are bent back upon the washer, forming guideways between which the outer end of the spring passes, and thus the washer is vertically movable upon the cut-away ends of the spring, the said shoulder 16 serving as a stop for engaging the ears of the washer and preventing the same from sliding off of the spring when the spindle has been removed for replacing the spring or for other purposes. It will be seen that the washers are at all times in their proper position upon the springs and will not be lost when removing or replacing a new spring on the harp.

The lower end of the spring 11 is turned outwardly and forms a loop 20, which extends through an opening 21 in the arm of the harp, the said loop preventing the springs from being rotated by the friction of the hub with the washer carried by the springs. This arrangement, as heretofore stated, prevents the rotation of the spring with the trolley-wheel; yet it is not attached thereto and can

be readily removed when desired. While I have described but one of these springs, it will be understood, as shown in the drawings, that there is a spring on each side of the hub of the wheel, which forms a perfect electrical contact between the hub of the wheel and the trolley-harp.

The outer upper edges of the arms 2 and 3 of the harp are provided with upwardly and inwardly extending ears 22 and 23, which extend adjacent to the sides of the trolley-wheel and prevent the trolley-wire from at any time coming in contact with the springs when placing the wheel on the trolley-wire.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a trolley-harp and its wheel, of V-shaped contact-springs loosely interposed between the wheel and the arms of the harp, the end of said spring having outwardly-extending portions passing through openings in the arms of the harp to prevent the rotation thereof with the wheel.

2. The combination with a trolley-harp and its wheel, V-shaped contact-springs loosely interposed between the wheel and the arms of the harp, the shaft of the wheel passing through the upper ends of the springs, the lower ends of the said springs having outwardly-extending looped portions passing through openings in the arms of the harp.

3. The combination with a trolley-harp and its wheel, V-shaped contact-springs loosely interposed between the wheel and the arms of the harp, one end of the said springs provided with a round opening through which the shaft of the wheel passes, the opposite end of said spring having an elongated opening, the said end on each side of the elongated opening is provided with cut-away portions forming guideways, washers having inwardly-turned ears forming slideways between which the cut-away portion of the spring passes and the said washer having openings through which the wheel-shaft passes, and the lower ends of the said springs having outwardly-extending looped portions passing through openings in the arms of the harp.

4. The combination with a trolley-harp and its wheel, contact-springs loosely interposed between the wheel and the arms of the harp, the lower end of said spring having outwardly-extending portions passing through openings in the arms of the harp to prevent the rotation thereof with the wheel; the arms of the harp having upwardly and inwardly extending ears which extend adjacent to the sides of the trolley-wheel and prevent the trolley-wire from at any time coming in contact with the springs.

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

JOHN HENSLEY.

Witnesses:
LEONIDAS HENSLEY,
EBEN LESH.