No. 690,639. Patented Jan. 7, 1902.

F. P. CROCKETT & O. P. JOHNSON.

TROLLEY HARP.

(Application filed Oct. 21, 1901.)

(No Model.)

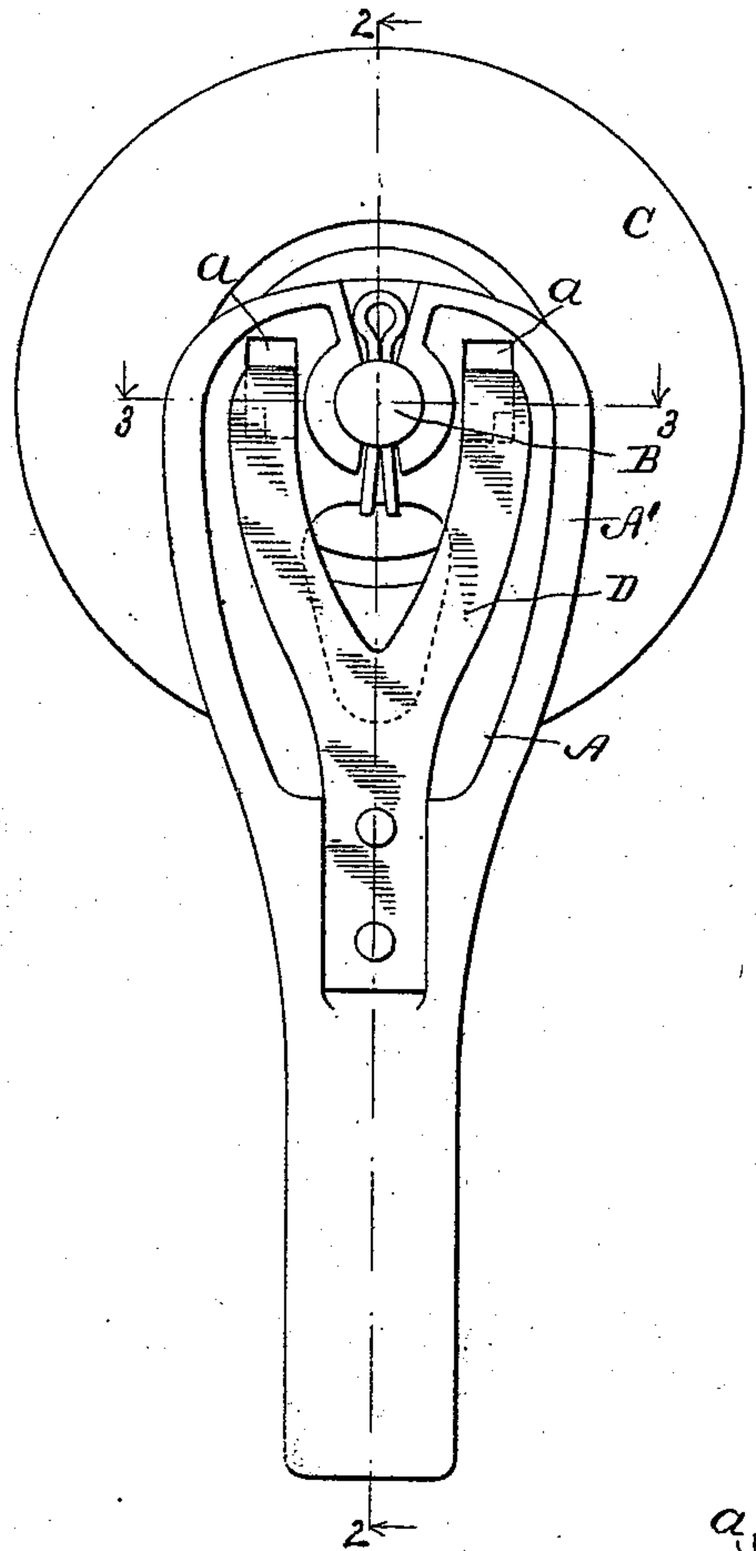

Fig. 1

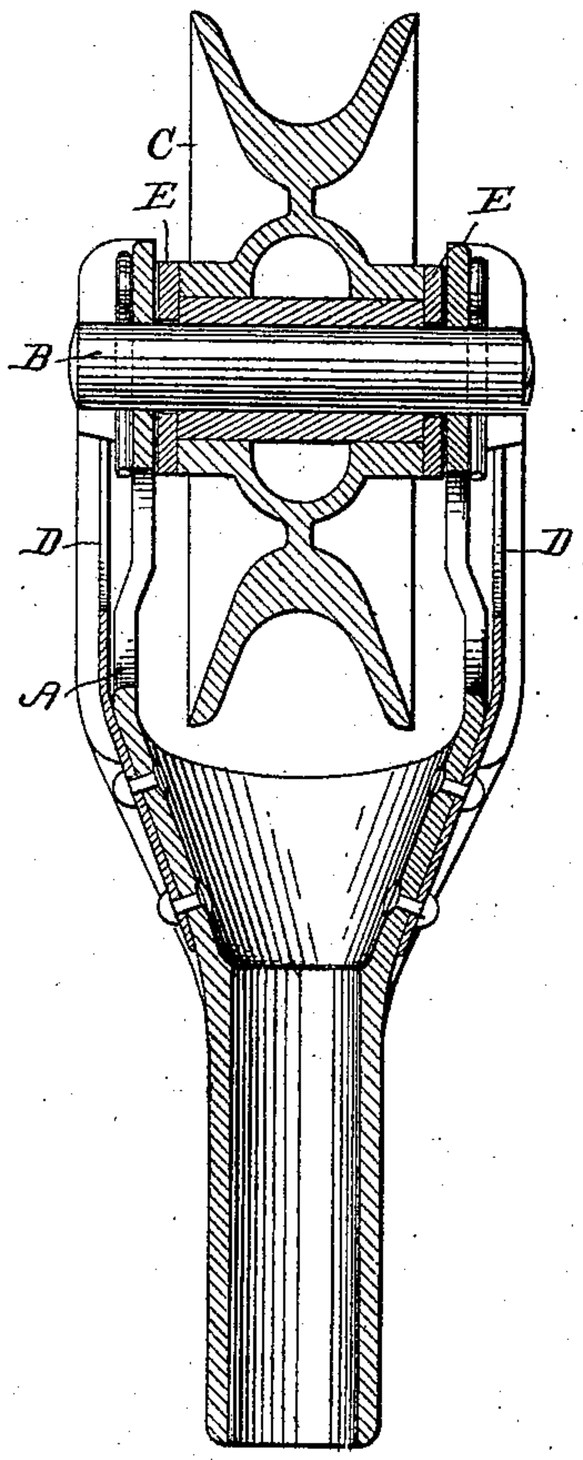

Fig. 2

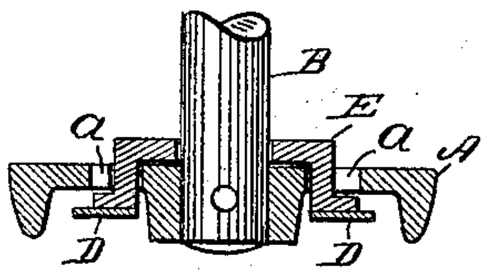

Fig. 3

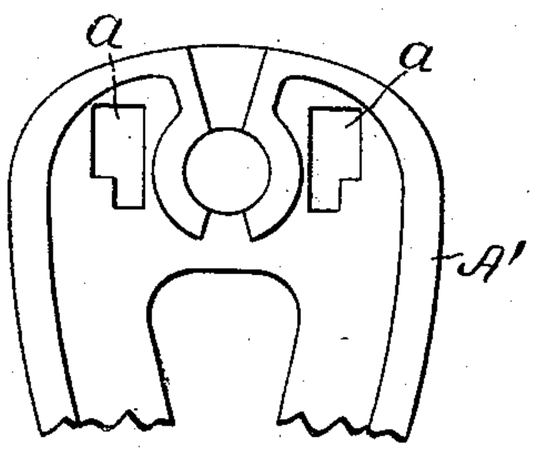

Fig. 4

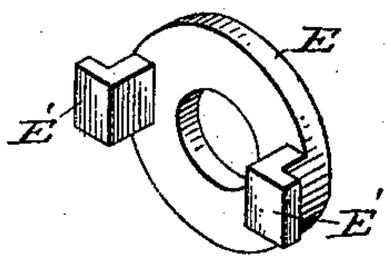

Fig. 5

Witnesses:
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UNITED STATES PATENT OFFICE.

FRED. P. CROCKETT AND OSRO PRENTISS JOHNSON, OF KALAMAZOO, MICHIGAN.

TROLLEY-HARP.

SPECIFICATION forming part of Letters Patent No. 690,639, dated January 7, 1902.

Application filed October 21, 1901. Serial No. 79,404. (No model.)

To all whom it may concern:

Be it known that we, FRED P. CROCKETT and OSRO PRENTISS JOHNSON, citizens of the United States, residing at the city of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Trolley-Harps, of which the following is a specification.

This invention relates to improvements in trolley harps or forks.

The objects of the invention are, first, to provide in a trolley-harp a structure in which a massive part contacts with the wheel, so that it will not be quickly consumed by wear and so that there is no danger from accidental breakage of the same; second, to provide an improved construction of trolley-harp in which the contact-spring is entirely separated from the wheel, whereby it is not consumed by wear and will last an indefinite period; third, to provide an improved construction of trolley-harp in which the contact-spring is separated from the wheel by a massive part, so that it cannot be consumed on account of wear on the wheel and in which the spring is protected from accidental injuries from outside forces by a suitable ribbed formation, whereby in the event of the bending of one of the sides of the harp the contact-spring is not exposed to injury, and, fourth, in a trolley-harp to provide an improved connection from a contact-spring outside of the harp to the hub or other part of the wheel within, thereby enabling the use of a massive part next to the wheel to increase the durability thereof and avoiding the wear on the more delicate parts.

Further objects will definitely appear from the detail description to follow.

We accomplish the objects of our invention by the devices and means described in this specification.

The invention is clearly defined and pointed out in the claims.

A structure embodying the features of our invention is fully illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation view of a structure embodying the features of our invention, the trolley-wheel being shown in position in the same. Fig. 2 is a longitudinal sectional view of the same, taken on line 2 2 of Fig. 1. Fig. 3 is a detail transverse sectional view taken on line 3 3 of Fig. 1. Fig. 4 is a detail side elevation of the upper portion of the harp, the contact-spring D being removed to show details of construction. Fig. 5 is a perspective view of the contact block or washer E removed from the harp.

In the drawings all of the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the lettered parts of the drawings, A represents the body portion of the harp or fork, the lower part of which is made hollow and adapted to attach to a trolley-pole and which extends upwardly at each side into plates. These side plates are suitably perforated to receive the journal-pin B for the trolley-wheel C. The said plates are preferably rounded in contour, so as to present a surface that is not liable to be engaged by any exterior part and having an outwardly-projecting rib or flange A′ at or near their outer edges. This flange or rib serves to strengthen the plates and also to protect the forked springs D, which are secured in suitable seats on the outside of the harp and extend upwardly and lie normally close to or press against the outer face of the side plates. It will be observed that the ribs A′, as before remarked, are in position to protect the springs D from injury, such as coming in contact with the trolley-wheel or being turned from the harp by being engaged by some exterior part while in transportation or in use. These flanges or ribs are preferably extended to form a space for the cotter-pin which retains the journal-pin in position and also to strengthen the side plates at this point. Blocks E, having lugs or projections E′, which are adapted to be inserted into the keyhole-slots *a a* in the plates, project through the same into contact with the branches of the forked spring D, by which they are held normally under spring-pressure. When the trolley-wheel is placed between them and the journal-pin inserted, these blocks are held securely in position and are held in contact

with the ends of the hub of the wheel. The openings *a* in said plates are of such size as to allow the blocks E to move freely, and it is evident that they will adjust themselves to the hub of the wheel and maintain a perfect contact and that the springs D are not subject to any wear and the parts are not liable to be destroyed by arcing and as they are fully protected from accidents will last as long as the harp. In maintaining a perfect contact and preventing the arcing consequent to imperfect contact the period of usefulness of the trolley-wheel is greatly prolonged.

We have described our invention in what we believe to be the simplest and most practical form. We desire to state that we are aware that it can be considerably varied in its structural details without departing from our invention. While the particular form of harp and side plates is desirable in that they protect the springs from all injury, other forms might be substituted with practically the same results, and instead of constructing the harp of one piece it might be constructed of several parts suitably united. The form of the spring D is capable of considerable variation, or two springs might be substituted therefor. Other structural changes will no doubt be readily suggested and apparent to those skilled in the art to which our invention pertains.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination of the harp divided into forks above, said forks being suitably ribbed as at A′ and having keyhole-slots *a*, *a*, therethrough; a journal-pin retained in position in said forks by suitable means to carry a trolley-wheel; a forked spring D secured to the outside of said harp and extending upwardly between and protected by said ribs; a contact-washer E having lugs E′ which are adapted to be inserted through the said slots *a*, *a*, to contact with the hub of the trolley-wheel and with the arms of the said spring, all coacting for the purpose specified.

2. The combination of the harp divided into suitably-ribbed forks, having perforations therethrough; a journal-pin extending through said forks to carry a trolley-wheel; a forked spring secured to said harp and extending upwardly between the said ribs; and a washer having lugs adapted to be inserted through the perforations in said forks to contact with the said wheel and with the arms of said spring, all coacting as specified.

3. The combination of the harp divided into forks; a journal-pin extending through said forks to carry a trolley-wheel; a forked spring secured to the outside of said harp; and a washer having lugs thereon adapted to extend through suitable perforations in said harp to contact with said wheel and the said spring, for the purpose specified.

4. The combination of the harp divided into forks; a journal-pin extending through said forks to carry a trolley-wheel; and a washer having lugs thereon adapted to extend through suitable perforations in said harp to contact with said wheel and the said spring for the purpose specified.

5. A forked trolley-harp; a spring secured to the outside of said harp; and a washer having suitable projecting lugs adapted to extend through suitable perforations in said forks and contact with the said spring for the purpose specified.

6. The combination with a trolley-harp of a spring secured to the outside of the same; a contact-block resting against the wheel and extending outwardly through the side of the frame against the contact-spring, for the purpose specified.

7. In a trolley-harp, the combination of a side thereof containing a keyhole slot or slots, with a contact-block adapted to rest against the wheel within, and having lugs adapted to extend outwardly through the keyhole-slots and engage the narrow portion of the same; and a spring outside of the frame resting against the block, whereby the contact-block is retained in position in the harp as specified.

In witness whereof we have hereunto set our hands and seals in the presence of two witnesses.

FRED P. CROCKETT. [L. S.]
O. PRENTISS JOHNSON. [L. S.]

Witnesses:
D. E. WOOD,
OTIS A. EARL.