No. 771,472. PATENTED OCT. 4, 1904.

J. HENSLEY.

TROLLEY HARP.

APPLICATION FILED MAY 5, 1904.

NO MODEL.

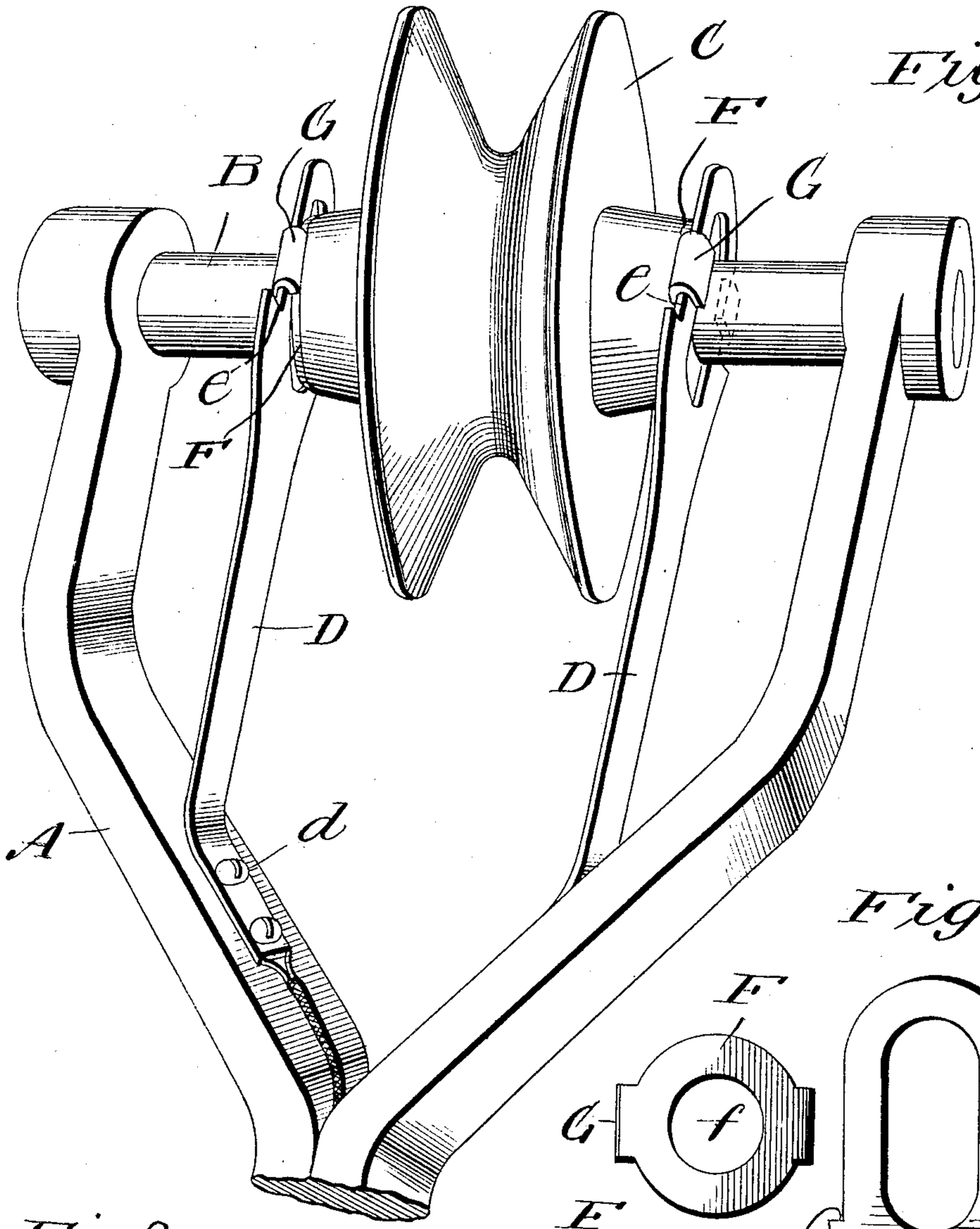


Fig. 1.

Fig. 2.

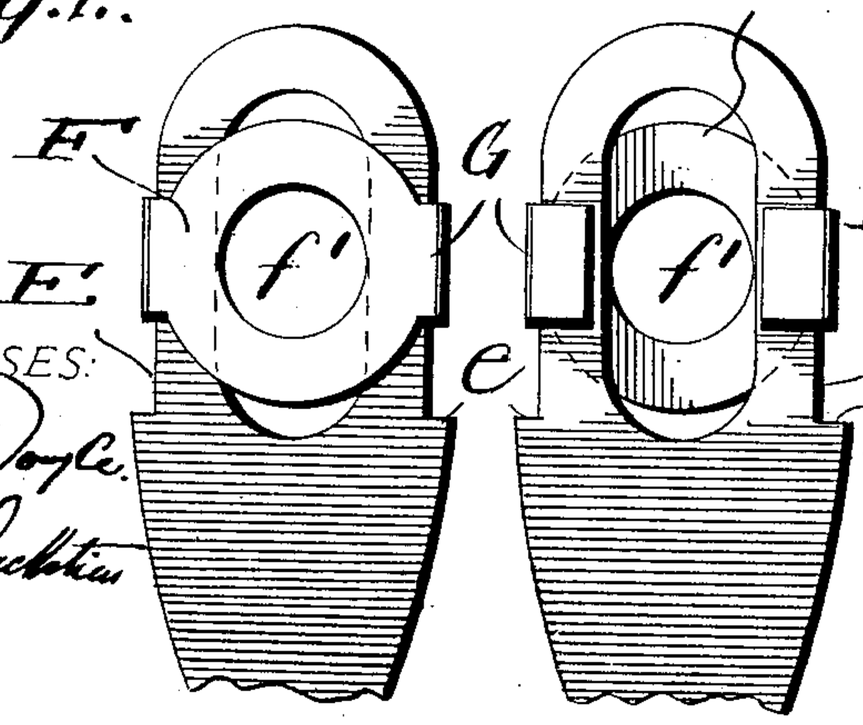
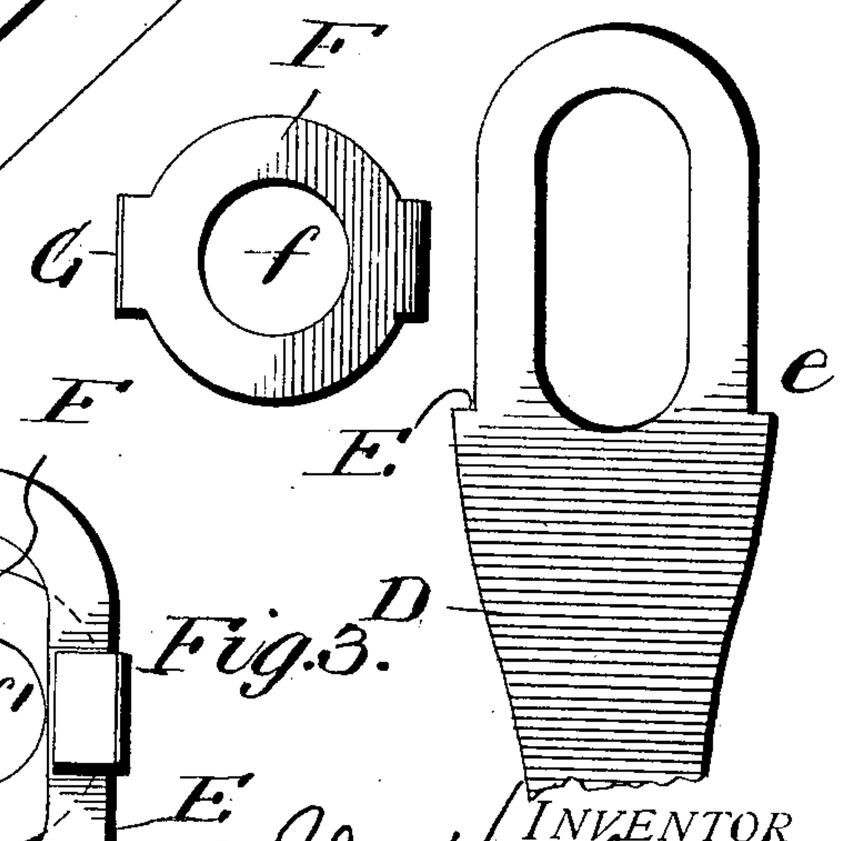


Fig. 3.

Fig. 4.



WITNESSES:

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No. 771,472. Patented October 4, 1904.

UNITED STATES PATENT OFFICE.

JOHN HENSLEY, OF HUNTINGTON, INDIANA.

TROLLEY-HARP.

SPECIFICATION forming part of Letters Patent No. 771,472, dated October 4, 1904.

Application filed May 5, 1904. Serial No. 206,583. (No model.)

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 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 contact-springs carrying at their outer end contact-washers which are slidable thereon, and thus the washers are at all times carried by the springs, and when the wheel and spindle are removed for placing a new bushing therein or for any other purpose the washers will not be lost or misplaced.

Another object of my invention is to prevent as little friction as possible between the washers and the spindle as the wheel travels longitudinally on the spindle, moving the washers thereon.

In the accompanying drawings, Figure 1 is a perspective view of a harp, showing my contact-spring applied thereto. Fig. 2 is a side elevation of my improved contact-spring, looking from the side on which the washer is mounted. Fig. 3 is a side elevation of the contact-spring, looking from the opposite side to that shown in Fig. 2, and Fig. 4 is a side view of the washer and spring separated.

Referring now to the drawings, A represents a trolley-harp which is of the ordinary form and is provided with the usual transverse shaft or spindle B, upon which is rotatably mounted the trolley-wheel C, all of which may be of any desired structure. The trolley-wheel, as well known in this class, moves longitudinally upon the spindle, so that the same can travel back and forth and follow the trolley-wire, thus overcoming any variations in the positioning or swinging of the wire or the rocking of the car.

In devices of this character in order to form a more perfect electrical contact between the wheel and the harp springs are ordinarily used. In my device I secure the contact-springs D to the inside of the harp at *d* in any desired manner, either by bolts or screw-bolts. The opposite end of the springs are provided with elongated openings through which the wheel-spindle B passes, and said springs are normally inwardly held against the sides of the trolley-wheel. The edges of said springs are provided with cut-away portions E, which extend parallel with the elongated openings, and provided at their lower ends with the shoulders *e*, the purpose of which will be hereinafter more fully described. Adjacent the inner faces of said springs are washers F, which have circular openings *f'*, through which the wheel-spindle passes, and the said washers resting against the outer faces of the trolley-wheel and the inner faces of the springs, thus forming a better electrical contact between the wheel and the harp through the springs. The said washers are provided with ears G, extending from opposite sides, and said ears are bent back upon the washers, forming guideways between which the outer ends of the springs pass, and thus the washers are vertically movable upon the outer cut-away ends of the spring, the said shoulders *e* serving as stops for engaging the ears of the washers and preventing the same from sliding down off of the springs when the spindle has been removed for replacing the bushing or for other purposes, and it will be seen that the washers are at all times in their proper position upon the springs and will not be lost.

It is understood, as before stated, in devices of this character that the wheel travels longitudinally upon the spindle or shaft, and as the same moves in one direction the spring on one side is compressed and the springs both move upon the spindle. The elongated openings in the springs allow of the free movement thereof without the engagement of the spindle with the walls thereof, and the washers traveling up and down upon the springs there is practically no friction or wedging of the washers on the spindle, and at the same time the washers are at all times supported by the springs and are not lost or misplaced when the spindle is removed for any purpose whatsoever.

Having 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, contact-springs carried by the harp and having elongated openings through which the wheel-spindle passes, and movable washers carried by the springs and through which the wheel-spindle also passes.

2. The combination with a trolley-harp and its wheel, contact-springs carried by the harp and having elongated openings through which the wheel-spindle passes, and washers having inwardly-turned ears around the openings, and said washers having openings through which the wheel-spindle also passes.

3. A contact-spring, comprising an elongated member provided with openings at one end, and an elongated opening at the opposite end, the said end on each side of the elongated opening is provided with cut-away portions forming guideways, and washers having inwardly-turned ears forming slideways between which the cut-away portions of the spring passes, and said washers having openings therein.

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

JOHN HENSLEY.

Witnesses:
H. L. BENDEL,
A. J. BEAL.