No. 699,744. Patented May 13, 1902.

G. E. CHAPMAN, G. L. ENSIGN & J. M. WEIR.

TROLLEY WHEEL.

(Application filed July 16, 1901.)

(No Model.) 2 Sheets—Sheet 1.

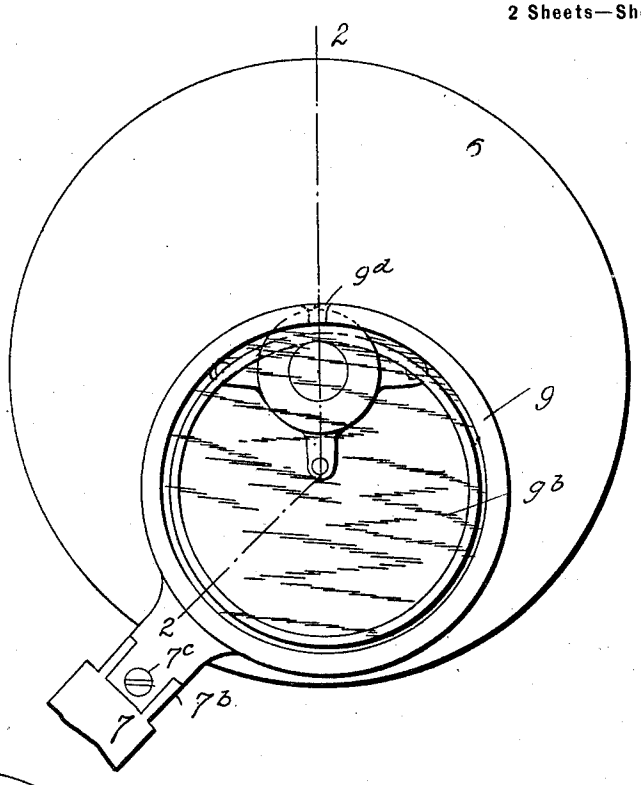

Fig. 1.

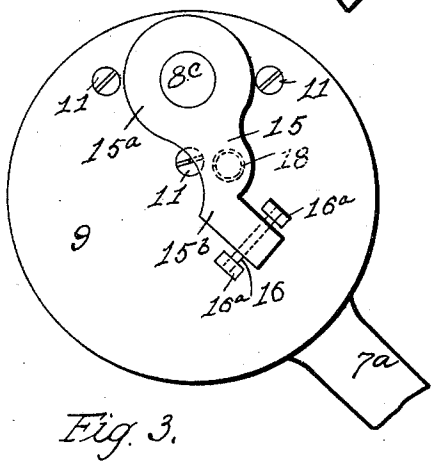

Fig. 3.

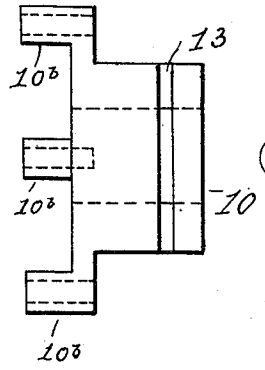

Fig. 4.

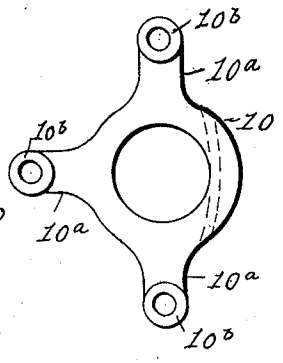

Fig. 5.

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TROLLEY WHEEL.

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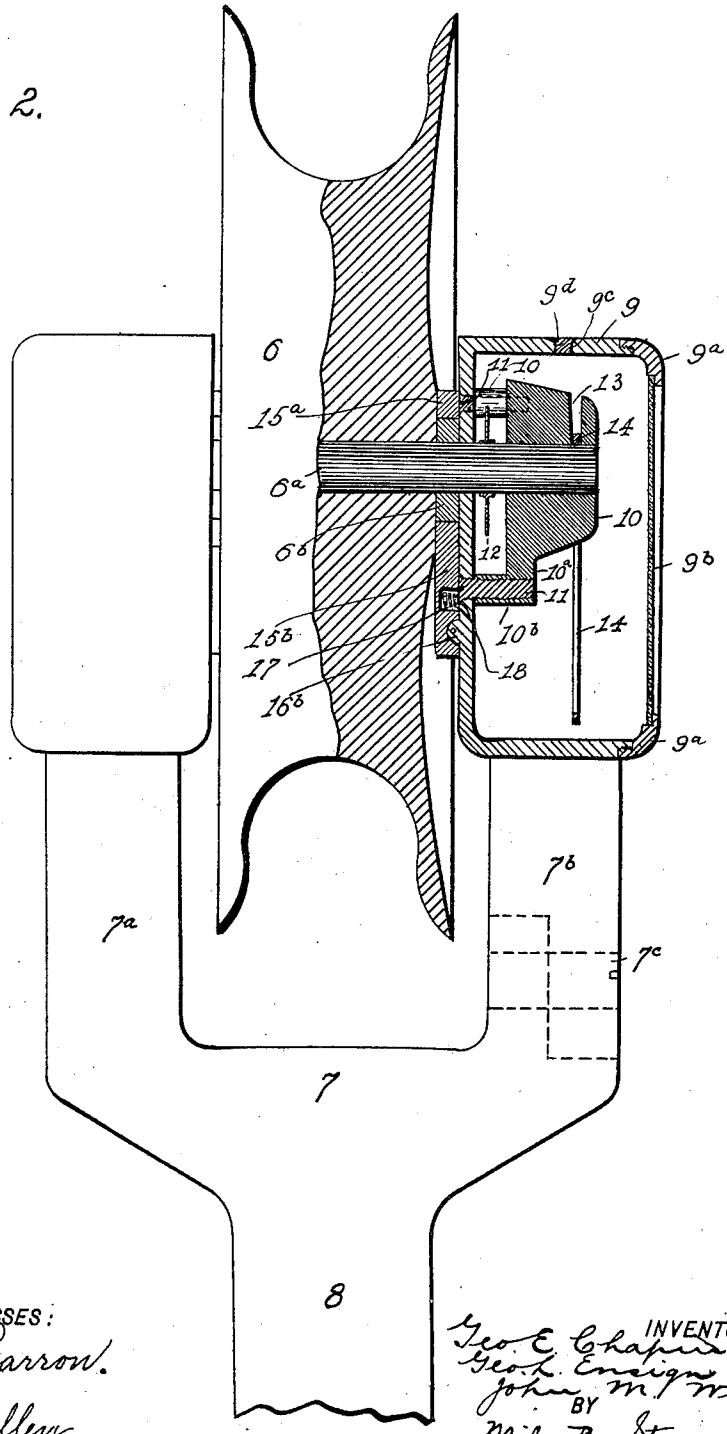
Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORGE E. CHAPMAN, GEORGE L. ENSIGN, AND JOHN M. WEIR, OF CLEVELAND, OHIO.

TROLLEY-WHEEL.

SPECIFICATION forming part of Letters Patent No. 699,744, dated May 13, 1902.

Application filed July 16, 1901. Serial No. 68,458. (No model.)

To all whom it may concern:

Be it known that we, GEORGE E. CHAPMAN, GEORGE L. ENSIGN, and JOHN M. WEIR, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Trolley-Wheels; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in trolley-wheels. Its object is to provide an improved means of contact between the trolley-wheel and its harp by the use of a yielding contact-piece which will take up wear between the parts.

A further object is the construction of an improved bearing and contact devices so that the current will not pass through the bearings.

A further object is to provide a contact-piece between a trolley-wheel and harp which will contact with the wheel both laterally and tangentially, affording two contact-surfaces.

With these and other objects in view the invention is hereinafter described, and is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the trolley. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a plan view of the inner face of the bearing-box, showing the contact-piece thereon. Fig. 4 is a top edge view of one of the bearing-blocks, and Fig. 5 is a side view of the same.

Referring more specifically to the drawings, 6 indicates the trolley-wheel, 7 the harp, and 8 the trolley-pole. The arms of the harp are indicated at 7^a and 7^b, the former being integral with the harp and the latter being detachably secured thereto by a screw 7^c. The trolley-wheel is fixedly secured to its axle or spindle 6^a and has an annular hub or shoulder 6^b, which is designed to contact with the contact-ring, to be hereinafter described. The axle is supported in the bearing-boxes at the end of each arm of the harp. Each bearing-box consists of a casing 9, forming an oil chamber or receptacle, provided at its outer face with a screw cap or cover 9^a, consisting of an annular metal piece having a central plate 9^b, of mica, glass, or other transparent substance, so that it can be seen when a necessity exists for replenishing the oil-chamber. To insert the oil, the top of the chamber has a screw-threaded hole 9^c, adapted to be closed by a screw-plug 9^d. Supported within the casings are the bearing-blocks 10, in which the axle of the trolley-wheel is free to rotate. The inner wall of each casing is provided with an axle-hole 8^c. This hole is situated eccentrically near the top of the casing, so that when in operation the axle will be at or near the highest point of the casing. The bearing-blocks 10 are provided with lateral arms 10^a, preferably three in number, and at the end of each arm is a spacing-lug 10^b, interiorly screw-threaded to receive screws 11, which are inserted through perforations in the inner wall of the casing, whereby the bearing-block is supported within the casing. The purpose of the spacing-lugs 10^b is to permit the insertion upon the axle between the bearing-block and the inner wall of the casing of a centrifugal washer 12, which revolves with the axle and prevents the oil thereon from working out through the axle-hole. It is evident that other devices may be used for the same purpose—for example, worm-grooves in the axle. In the upper part of the bearing-block is a groove 13, in which is contained a ring 14, which projects down into the oil in the lower part of the chamber. This ring rests upon the axle and rotates therewith by frictional contact, whereby the oil will be carried by the ring over the upper surface of the axle and lubricate the bearing.

To the inner wall of the casing 8 is pivotally secured a contact-piece 15, which comprises a ring 15^a and a laterally-extending shank 15^b, through which extends a pivot 16, the ends of which are secured in ears 16^a, projecting from the wall of the casing. The contact-piece is loosely mounted upon the pivot, so that it has a slight play or motion longitudinally the pivot. The purpose and effect of this is that the ring 15^a rests by its

weight upon the shoulder or hub 6^b when the parts are assembled. In the face of the contact-piece next to the inner wall of the bearing-box is a recess 17, forming a seat for a spiral spring 18, which presses against the wall of the casing and is adapted to yieldingly force the contact-ring against the side of the trolley-wheel. By this means a lateral contact between the side of the wheel and the contact-ring is formed and also a tangential contact between the periphery of the hub and the ring. All wear between the parts is taken up and a very efficient contact device is produced. The pivotal connection between the contact-piece and the bearing-boxes is below the bearing-blocks, so that the current does not pass through the bearings.

The hub 6^b may be dispensed with and the contact-ring rest directly upon the axle, if desired; but the construction shown is preferable in that it affords a larger contact-surface.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In combination, a trolley-pole and harp, a trolley-wheel supported thereby, and a contact-piece between the harp and the wheel having both lateral and tangential contact-surfaces with the wheel.

2. In combination, a trolley-pole and harp, a trolley-wheel supported in bearings on the harp, an axle for the wheel, a hub or shoulder extending from the side of the wheel, and a contact-piece between the wheel and the harp having two lines of contact, one laterally with the wheel and the other tangentially with the hub or shoulder.

3. In combination, a trolley-pole, a harp at the upper end thereof, a bearing-box on each arm of the harp, a wheel between the bearing-boxes having an axle extending into the bearing-boxes, and a contact-ring hinged to the inner wall of the bearing-box and adapted to contact with the wheel.

4. In combination, a trolley-pole, a harp at the upper end thereof, a bearing-box on each arm of the harp, a wheel between the bearing-boxes having an axle extending into the bearing-boxes, and a contact-ring hinged to the inner wall of the bearing-box and adapted to yieldingly contact with the wheel.

5. In combination, a trolley-pole, a harp at the upper end thereof, a bearing-box on each arm of the harp, a wheel between the bearing-boxes having an axle supported in the bearing-boxes, and a contact-ring hinged to the inner wall of the bearing-box, the hinged connection being such that the ring has longitudinal and radial movement relative to the axle, so that it contacts with the side of the wheel and with the periphery of the axle or hub.

In testimony whereof we have affixed our signatures in presence of two witnesses.

GEORGE E. CHAPMAN.
GEO. L. ENSIGN.
JOHN M. WEIR.

Witnesses:
LOTTIE NEWBURN,
JNO. A. BOMMHARDT.