No. 716,362. Patented Dec. 23, 1902.

W. L. BAKER.

TROLLEY.

(Application filed Sept. 29, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

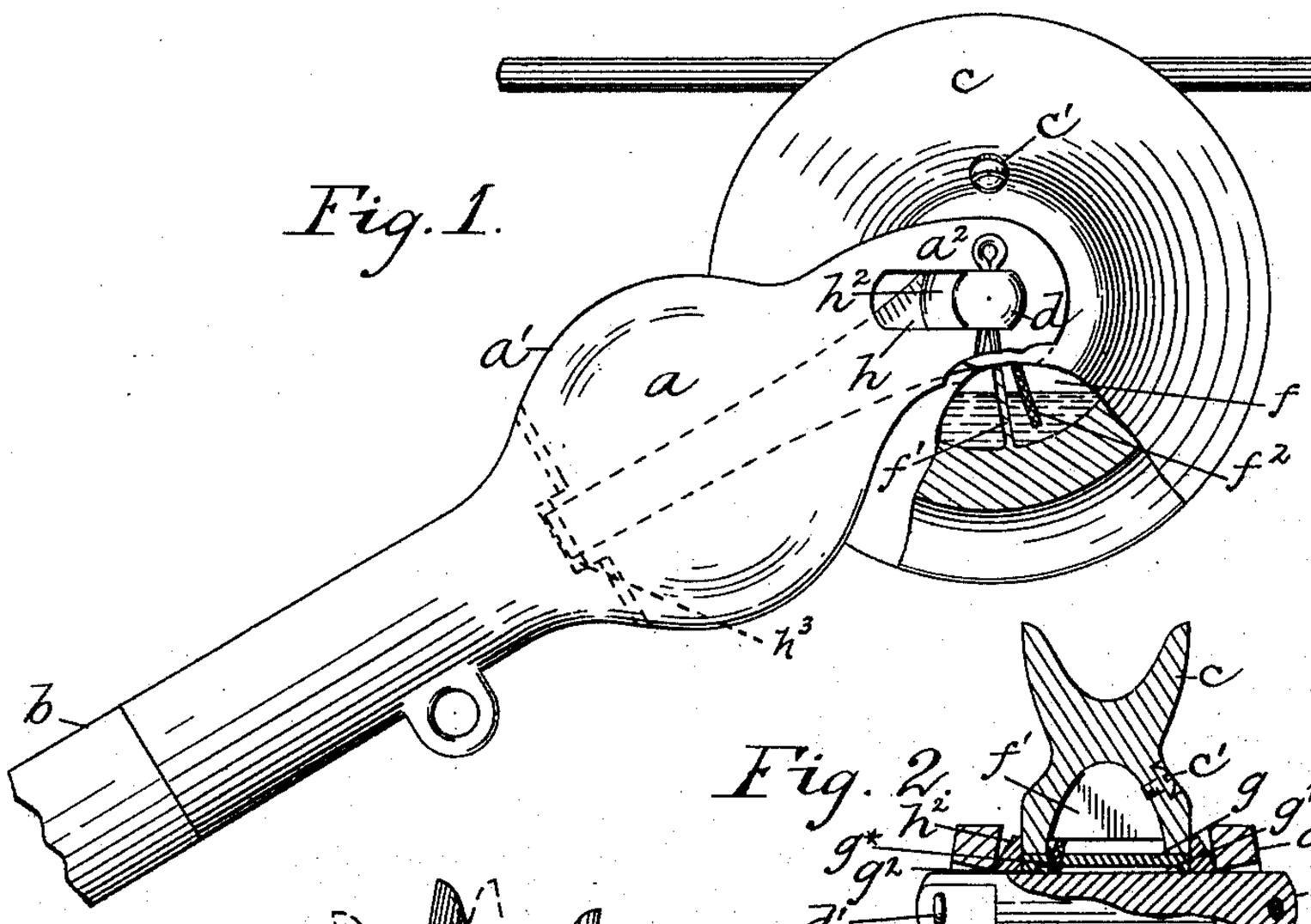

Fig. 2.

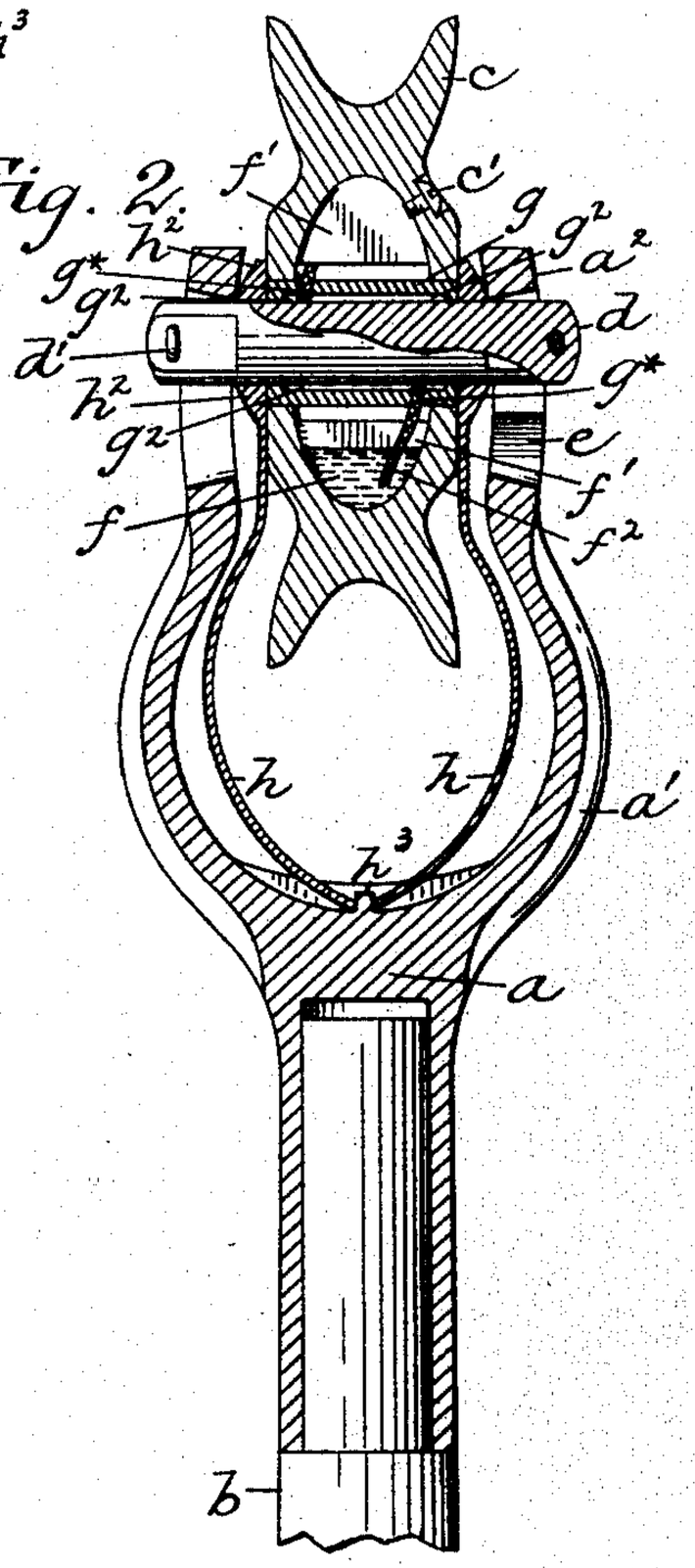

Fig. 3.

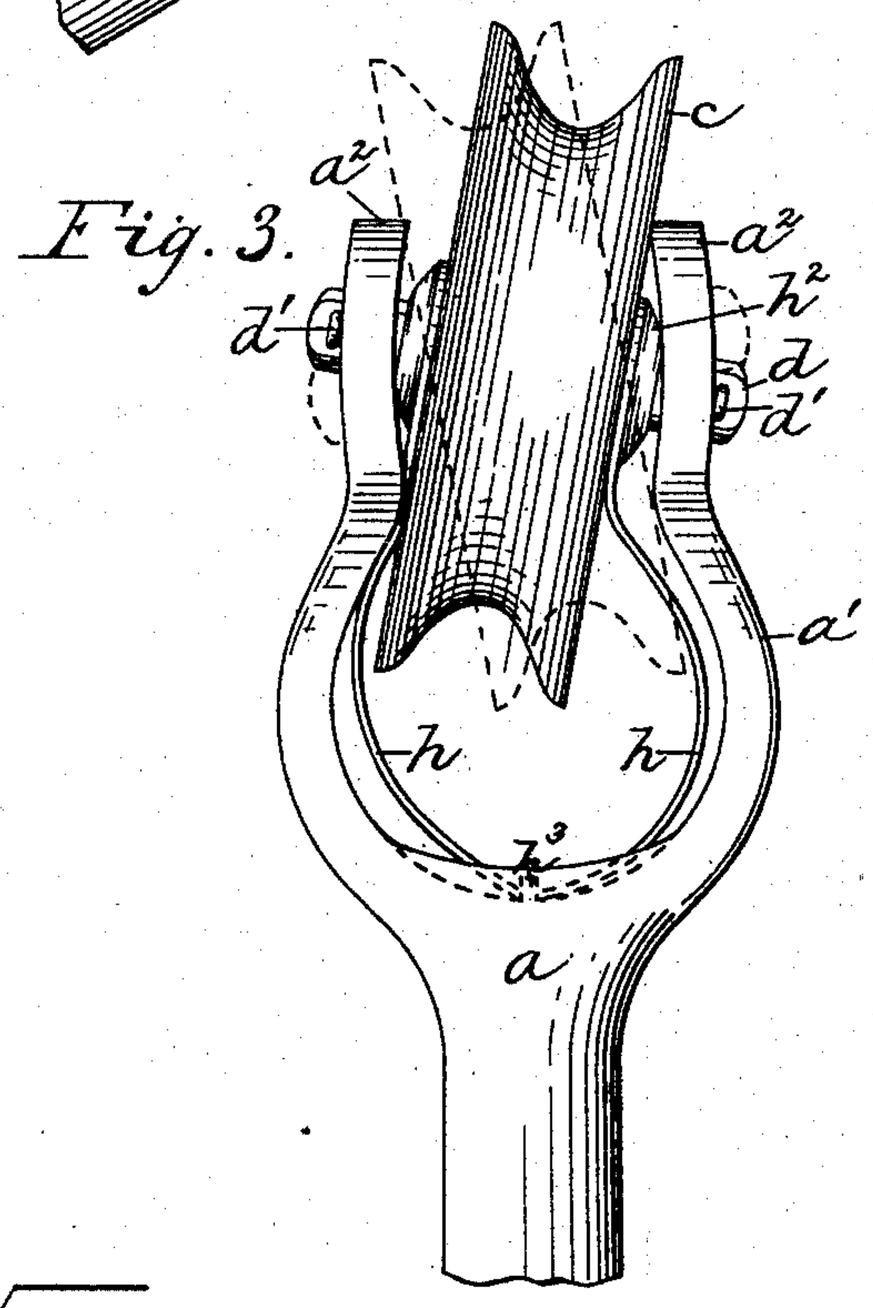

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Fig. 4

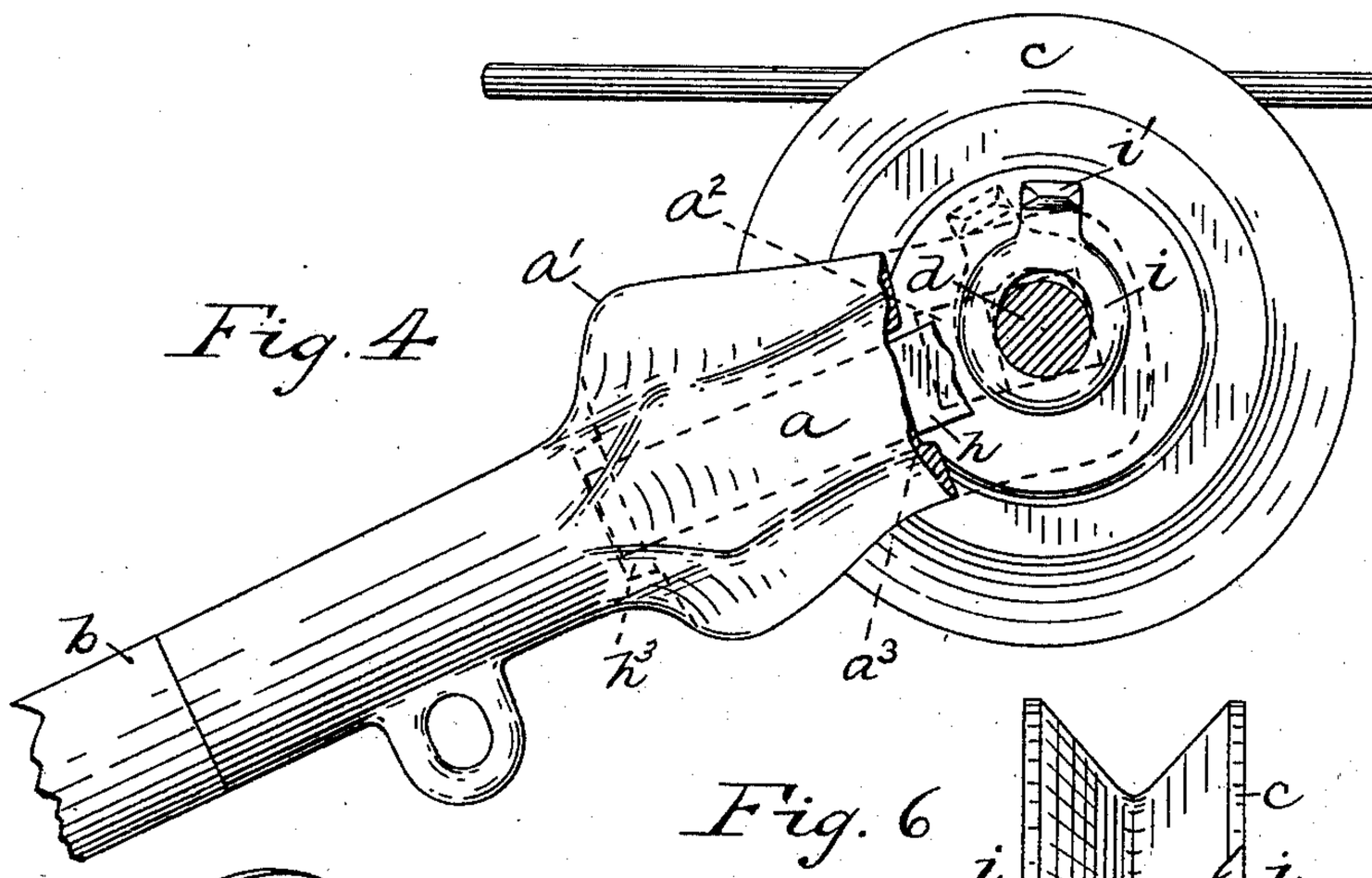


Fig. 5

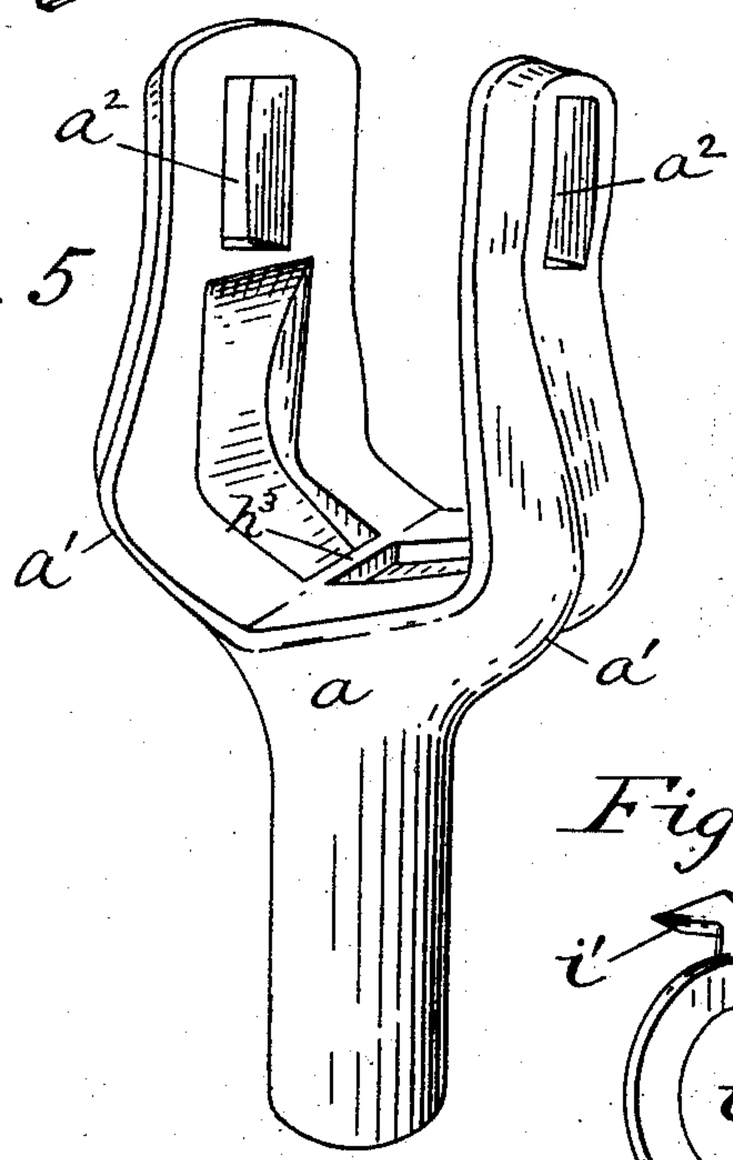


Fig. 6

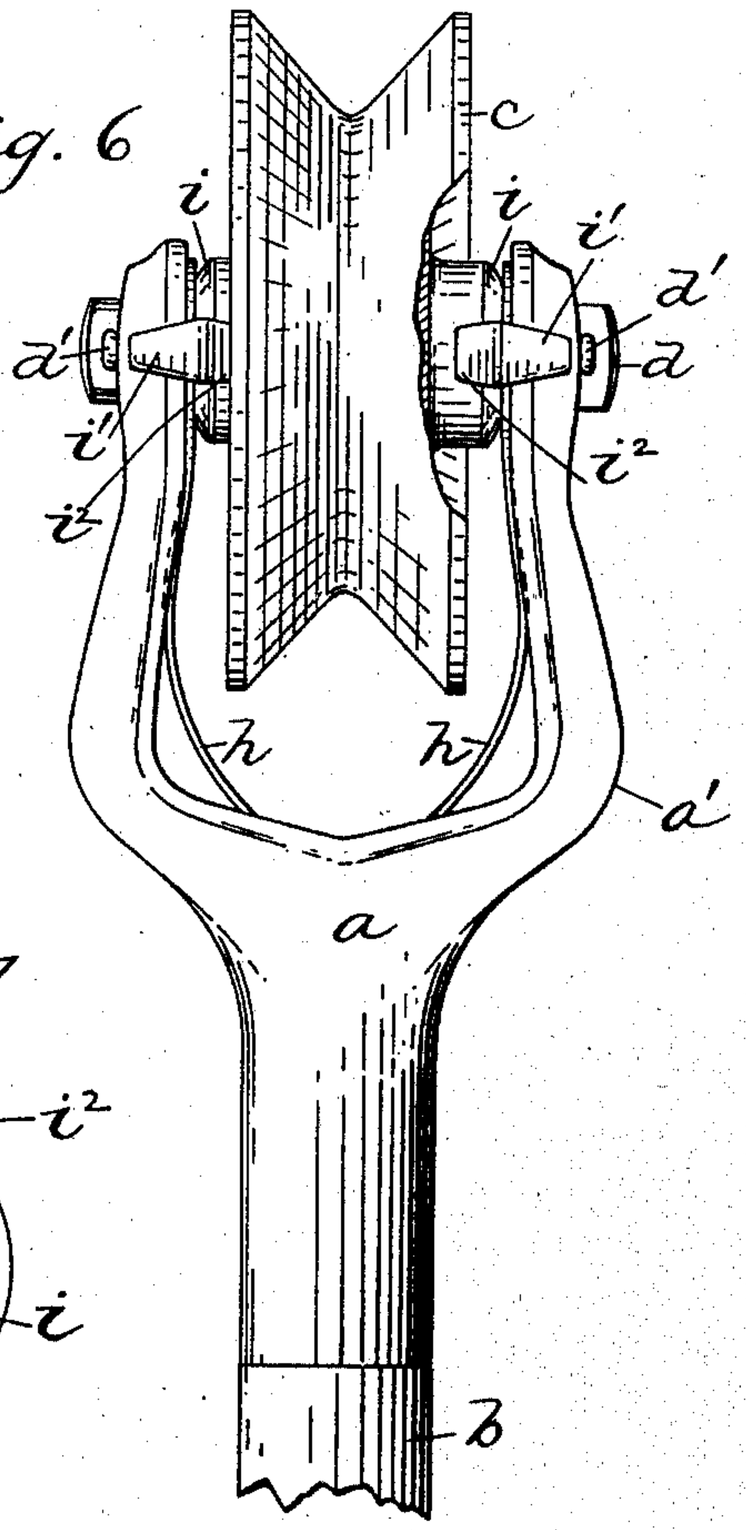
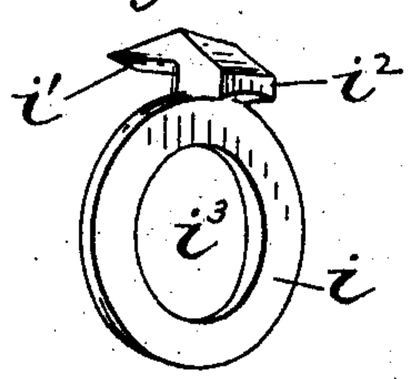


Fig. 7



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UNITED STATES PATENT OFFICE.

WALLACE L. BAKER, OF PAINESVILLE, OHIO.

TROLLEY.

SPECIFICATION forming part of Letters Patent No. 716,362, dated December 23, 1902.

Application filed September 29, 1902. Serial No. 125,236. (No model.)

To all whom it may concern:

Be it known that I, WALLACE L. BAKER, a citizen of the United States of America, and a resident of Painesville, in the county of Lake and State of Ohio, have invented certain new and useful Improvements in Trolleys, (Case No. 2,) of which the following is a specification.

My invention relates to improvements in trolleys, and has for its object the provision therein of an intermediate contact appliance, of means adapting the trolley-wheel better to accommodate itself to irregularities in the trolley-wire, and of a frame or harp particularly designed for permitting the self-adjustment of the wheel therein and for affording an efficient housing and support for the contained parts.

In my Patent No. 701,247, granted May 27, 1902, I have shown and described a trolley device of the same general type as the one herein set forth, which device of the patent is adapted through the self-adjustment of the trolley-wheel within its frame to accommodate curved or irregularly-disposed portions of the trolley-wire and largely prevents their disengagement by reason of the wheel's slipping from the wire, with the attendant difficulties experienced in practice. My present invention aims to perfect in certain respects not only this improved device, but other types of trolley devices, to which the improvements are applicable as well.

I may first briefly describe the trolley embodying my invention, herein shown as consisting of a harp or frame having slotted ways wherein the trolley-wheel is rotatably mounted and is angularly adjustable, the said frame being formed to contain and accommodate the auxiliary parts associated with the wheel. Disposed between the wheel and frame, preferably upon either side, are mounted oscillating contact parts adapted to be forced by the action of the wheel into close engagement with the frame to complete their electrical continuity. Two flat and somewhat-bowed springs contained within the frame and abutting at their lower ends a suitable stop or shoulder are mounted most effectively to press endwise against the trolley-wheel axle and normally force the same to the rear of its supporting ways or slots, thereby serving to center the said wheel within its frame.

The trolley-wheel which I preferably employ is a hollow or cored casting serving as an oil-reservoir, wherein means are provided for directing the contained oil to a central-bored sleeve closing said chamber and providing the bearing for the trolley-wheel.

My said invention can be much more readily explained by making reference to the accompanying drawings, illustrating preferred embodiments thereof, wherein—

Figure 1 is a side elevation of a trolley frame and wheel, shown in position of contact with the trolley-wire. Fig. 2 is a sectional view through the trolley wheel and frame. Fig. 3 is a plan view of the device, indicating the adjustability of the wheel within its frame and the action of the springs. Fig. 4 is a side elevation of a somewhat-modified form or different type of my improved trolley device, broken away in part to show the oscillating contact-maker. Fig. 5 is a perspective view of the frame of said trolley device. Fig. 6 is a front view of the said device; and Fig. 7 is a detailed view in perspective of the oscillating contact device, which in Fig. 4 is shown in full and dotted lines in positions of engagement with the trolley-frame.

The same character of reference has been employed to designate similar parts in each of the several figures of the drawings.

The harp or trolley-frame *a*, terminating the trolley-pole *b*, is quite wide, being considerably enlarged or outwardly expanded at *a'* to permit of a wide range of angular adjustment of the trolley-wheel *c* therein. Slotted terminal portions a^2 form the supports for the said wheel *c*, between which it is mounted by means of an axle pin or bolt *d*, having flattened terminal portions to engage the walls of the slots and prevent the rotation of said bolt. One of the slots should be of sufficient size or be cut away, as at *e*, to permit the insertion and removal of the axle pin or bolt, which is normally maintained in position by means of spring-keys *d'*, extending through holes in said bolt.

As before stated, the preferred type of trolley-wheel comprises a hollow or cored casting so constructed as to afford an interior reser-

voir for oil having diametrically-disposed walls f', extending to within a short distance of and adapted to direct the contained oil against the sleeve g during the rotation of the wheel, said sleeve providing the bearing for the trolley-wheel and closing the oil-reservoir f as well. A screw-closed opening c' permits the renewal of the oil within the reservoir f from time to time. The sleeve g is pierced with openings g^* near its opposite ends substantially beneath the oil-directing walls f', within each of which openings a suitable absorbent or wick f^2 is firmly seated, said wick being adapted to dip into the oil contained within the reservoir and assist in supplying oil to the bearing-surface afforded by the inner bore of the sleeve. Registering with the openings g^* are the narrow longitudinal grooves g^2, cut in the inner bore of the sleeve, which serve to supply the oil throughout the length of the bearing-surface. The features of the oiling device are brought out in the broken-away portion of Fig. 1 and in the sectional view Fig. 2.

Mounted within the frame and engaging the trolley-wheel axle upon either side of the wheel are the bowed springs h, their other extremities extending down and abutting against a stop or lug h^3, formed at the fork of the trolley-frame. These springs serve to center the trolley-wheel within the frame in normal position to engage the trolley-wire, the disclosed manner of mounting them braced thus within the frame affording the most efficient positioning therefor. Normally the trolley-axle will be forced by the springs to the rear of the supporting-slots; but immediately a curved or angularly-disposed portion of the trolley-wire is engaged by the wheel said wheel will be influenced by the deflection of the wire to slide within its frame against the tension of the springs and assume an angular position with respect to said frame sufficient to accommodate the curve when the same is not fully compensated for by the swivel of the trolley-pole. When a straight length of wire is again encountered by the wheel, the springs assist it to recover its normal position. The compensating action of the wheel and springs is indicated by the full and dotted lines in Fig. 3 and is analogous to the corresponding functions in the device of my prior patent. In the present trolley device, however, the springs are wholly contained within and protected by the harp or frame and are much more effectively mounted and less liable to breakage, being disposed within the frame to exert an endwise pressure upon the axle in opposition to each other. The simple mounting for the springs herein shown also permits them readily to be sprung into place in assembling or repairing the trolley device, while their accidental displacement is guarded against. It is apparent, however, that other means for correspondingly mounting the said springs within the frame and retaining them in position might easily be provided in my trolley device.

Referring now more particularly to the features peculiar to Figs. 4, 5, 6, and 7, which drawings are of somewhat-reduced scale, it will be seen that the frame a is designed both to accommodate the springs h and the contact device i, previously mentioned, the fork of said frame being somewhat broader and more abrupt than most trolley-frames, and is provided with recessed side portions a^3 for accommodating the bowed springs h. Also a large wheel c is shown mounted between the slotted ways of the frame, which wheel is designed for cars driven at high speeds and is encircled by a deep V-shaped groove, better adapted to keep the wire. Bearing on the ends and top of the hub, at either side of the said wheel, are the oscillating contact devices i. These contact devices have oppositely-projecting lateral lugs i' i^2, respectively engaging the frame a and the hub of the wheel, elongated openings i^3 fitting loosely over and accommodating the axle-pin. By reason of the relatively large bearing-surfaces engaging the trolley-wheel said contact devices are oscillated either to rear or forward positions during the rotation of the wheel, so that the exterior lugs i' are closely engaged with the frame and maintain the electrical continuity between the frame and the trolley-wheel. Allowance for wear of the parts is secured by the elongated or oval openings i^3 in the annular portions of said contact devices, which permit the inner lugs i^2 to ride upon the hub of the trolley-wheel, thereby augmenting the contact-surfaces and assisting to prevent internal sparking in the device.

The improvements above disclosed are adapted to increase the efficiency of trolley devices to a marked degree, and I therefore desire to reserve the same to myself, as hereinafter claimed.

I claim—

1. In a trolley device, the combination with a supporting harp or frame, of a trolley-wheel adjustably mounted therein, and flat, bowed springs associated with the trolley-wheel, disposed and braced within the frame to exert an endwise pressure therein and yieldingly maintain said wheel in normal position in its frame, substantially as set forth.

2. In a trolley device, the combination with a supporting harp or frame, of a trolley-wheel rotatably mounted therein, and flat, bowed springs associated with the trolley-wheel, disposed and braced entirely within the frame to exert an endwise pressure therein, the said frame having recessed side portions and an engaged stop or lug for the accommodation of the bowed springs, substantially as set forth.

3. In a trolley device, the combination with a bifurcated harp or supporting-frame having a projection or lug at the base or fork of said frame, of a trolley-wheel rotatably mount-

ed between the arms of said frame, and lateral springs disposed wholly within the frame abutting said lug and acting against the trolley-wheel, substantially as set forth.

4. The combination in a trolley device, of a harp or frame, the trolley-wheel rotatably mounted therein, and an oscillating contact part engaging said trolley-wheel adapted to be forced by the movement of the wheel into close engagement with the frame, thereby maintaining their electrical continuity, substantially as set forth.

5. The combination in a trolley device, of a harp or supporting-frame, a trolley-wheel, an axle-pin rotatably mounting the same within the frame, and an oscillating contact part engaging said wheel comprising an annular portion encircling the axle-pin and a laterally-extending lug for completing the electrical continuity between the parts, substantially as set forth.

6. In a trolley device, the combination with a supporting harp or frame having terminal parts slotted or longitudinally recessed to receive the axle-pin, of a trolley-wheel, an axle-pin rotatably mounting said wheel and having free angular adjustment with respect to the frame within the slotted terminal parts, and flat, bowed, lateral springs associated with said trolley-wheel, disposed and braced wholly within the frame to exert an endwise pressure upon the wheel and adapt it readily to respond to changes in the direction assumed by the engaged trolley-wire, substantially as set forth.

Signed at Cleveland, Ohio, this 26th day of September, A. D. 1902, in the presence of two subscribing witnesses.

WALLACE L. BAKER.

Witnesses:

HARLAND J. WRIGHT,

ALBERT LYNN LAWRENCE.