No. 843,373. PATENTED FEB. 5, 1907.

J. STRUTH & C. HOLZAPFEL.

TROLLEY.

APPLICATION FILED JUNE 23, 1906.

Fig. 1

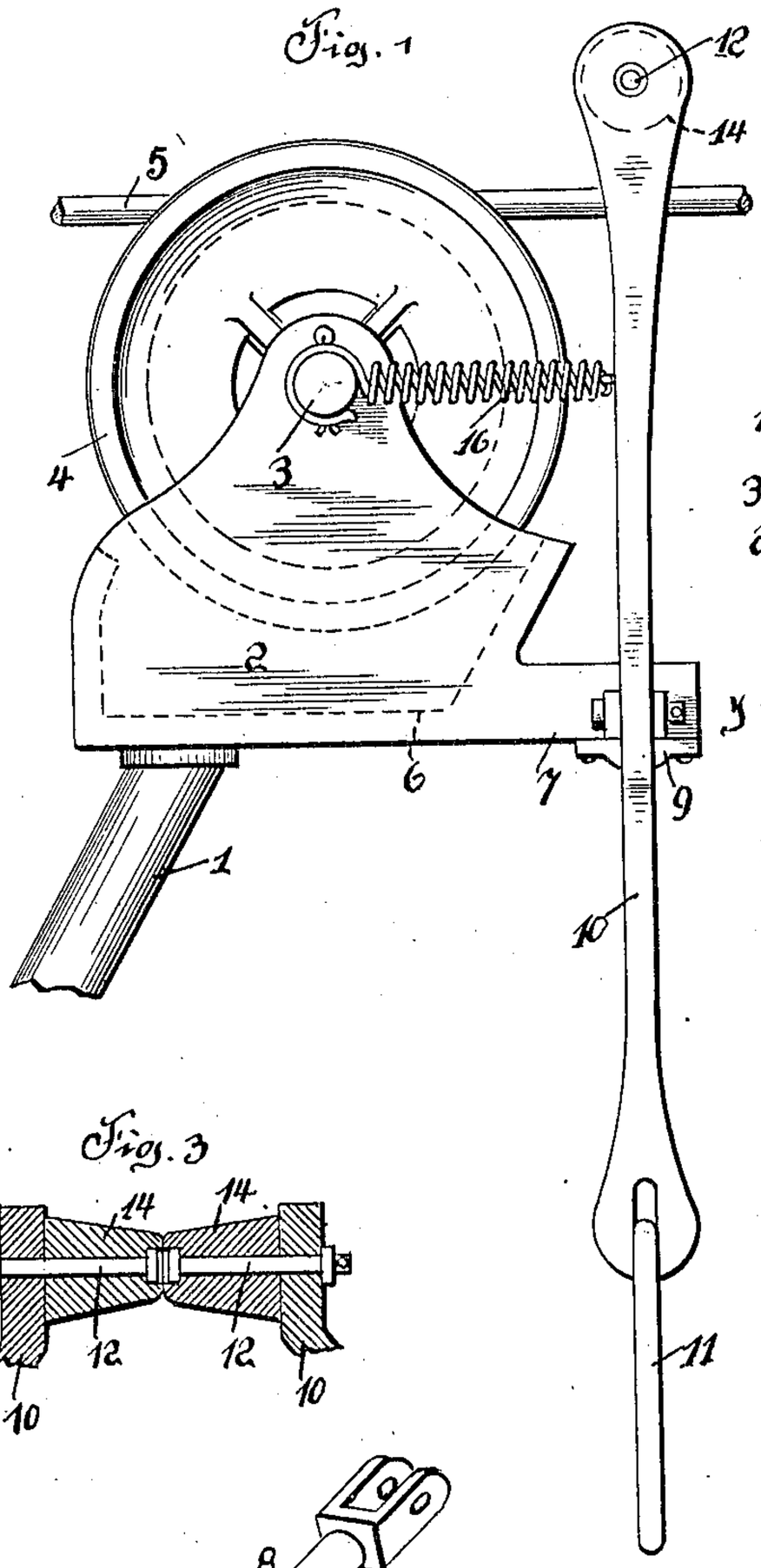


Fig. 2

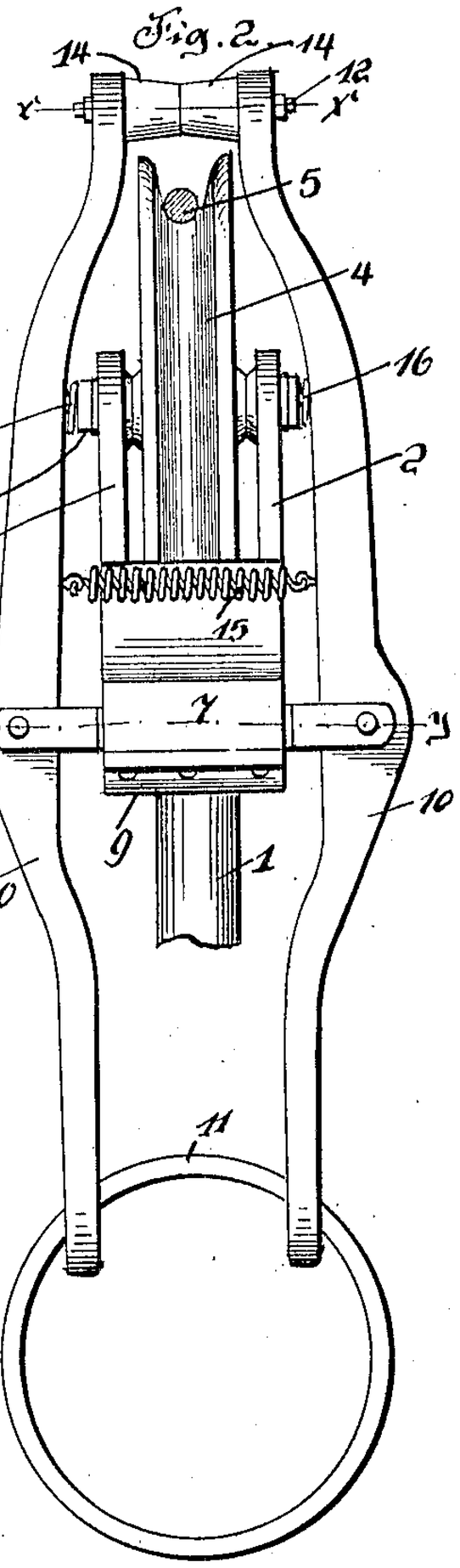


Fig. 3

Fig. 5.

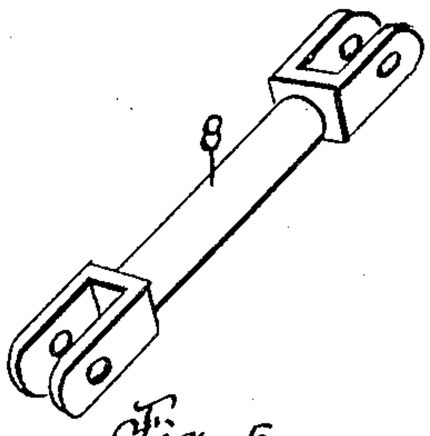
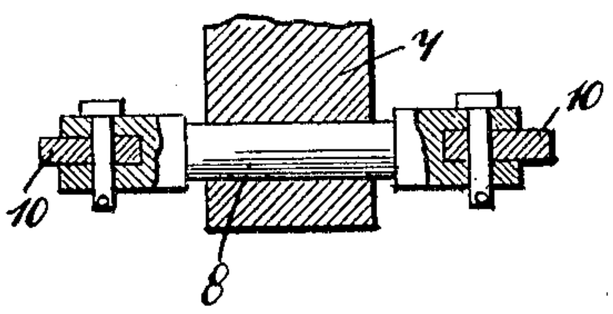


Fig. 4.



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UNITED STATES PATENT OFFICE.

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TROLLEY.

No. 843,373. Specification of Letters Patent. Patented Feb. 5, 1907.

Application filed June 23, 1906. Serial No. 323,136.

To all whom it may concern:

Be it known that we, JOHN STRUTH and CONARD HOLZAPFEL, citizens of the United States of America, residing at Primrose, in the county of Washington and State of Pennsylvania, have invented certain new and useful Improvements in Trolleys, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in trolley-harp attachments; and the invention has for its primary object the provision of novel means in connection with a harp for retaining a trolley-wheel carried by said harp upon a trolley-wire or electrical conductor.

Another object of this invention is to provide means for the above-mentioned purpose that can be easily and quickly operated to permit of the trolley-wheel being removed from its trolley-wire.

A further object of the invention is to provide a simple and inexpensive attachment for trolley-harps which will be positive in its action and possessed of durable properties.

With these and other objects in view the invention consists in the novel construction, combination, and arrangement of parts to be presently described in detail and then particularly pointed out in the appended claim.

Referring to the drawings accompanying this specification, Figure 1 is a side elevation of our improved harp attachment. Fig. 2 is a rear elevation of the same. Fig. 3 is a detail sectional view of a portion of the attachment, taken on the line $x\ x$ of Fig. 2. Fig. 4 is a horizontal sectional view of a portion of the attachment, taken on the line $y\ y$ of Fig. 2; and Fig. 5 is a detail perspective view of a journal-pin forming part of the attachment.

In the accompanying drawings we have illustrated a portion of a trolley-pole 1, equipped with a conventional form of harp 2, such as used in connection with electrically-operated mine-cars. In the harp 2 is mounted a pin 3, upon which revolves a trolley-wheel 4, adapted to engage a trolley-wire 5.

To put our invention into practice, we provide the base 6 of the harp with a rearward extension 7, in which our attachment is pivotally mounted. The attachment consists of journal-pin 8, revolubly held in engagement with the extension 7 by a bearing-plate 9, secured to the under side of the extension 7. The ends of the pin 8 are bifurcated, and pivotally mounted in the ends of said pin are vertically-disposed arms 10. The upper and lower ends of said arms are bent inwardly, and in the lower ends of said arms is loosely mounted a link or ring 11, to which is secured a trolley-rope. (Not shown.) The upper ends of the arms are provided with inwardly-extending pins 12, upon which are journaled substantially cone-shaped rollers, the ends of said rollers engaging one another and bridging the trolley-wire 5.

The arms 10 above the extension 7 are connected together by a retractal spring 15, and the front edge of said arms are connected by springs 16 to the ends of the pin 3, these springs serving to maintain the arms 10 in a vertical position, while spring 15 retains the cone-shaped rollers 14 in engagement with one another.

In placing the trolley-wheel 4 upon the wire 5 the ring 11 is pulled downwardly to separate the upper ends of the arms 10 and allow the wheel 4 to engage said wire.

When a harp equipped with our improved attachment is in operation, the cone-shaped rollers 14 will prevent the trolley-wheel 4 from being displaced by any irregularity in a trolley-wire, sharp curves, crossovers, or by the rapidity at which the harp moves. When placing a hanger or trolley-wire support, the arms 10 recede until the hanger is passed, and then the spring 15 returns said arms to their normal position.

By reason of the arms 10 being pivotally mounted on the extension 7 of the trolley-harp it will be observed that these arms are permitted to swing rearwardly at their upper ends when the cone-shaped rollers 14 come in contact with a switch, hanger, or the like on the trolley-wire 5. The conical shape of the rollers causes such contact to be made at the point between the rollers, and the pressure on the same by the obstruction is such as to cause the rollers to spread sufficiently to clear the obstruction, the spring 15 immediately upon the obstruction being cleared closing the arms again to their normal position, and the springs 16 returning the arms to their normal vertical position. The arms, however, are not liable to be spread by the action of the trolley-wheel leaving the wire, owing to the fact that in such a case the trolley-wire when it leaves the wheel strikes one or the other of the conical rollers and is immediately returned to the groove in the trolley-wheel.

The attachment is constructed of strong and durable metal and is applicable to various types of harps.

Such changes in the size and minor details of construction as are permissible by the appended claims may be resorted to without departing from the spirit and scope of the invention.

What we claim, and desire to secure by Letters Patent, is—

The combination with a trolley-harp having a pin mounted therein, a trolley-wheel journaled upon said pin and adapted to engage a trolley-wire, of a rearward extension carried by said harp, a pin journaled in said extension, arms pivotally mounted in the ends of said pin, and having their lower ends connected together, revoluble cone-shaped rollers carried by the upper ends of said arms and contacting with one another, a retractal spring connecting said arms together, and means connecting with the pin of said harp to retain said arms in a vertical position, substantially as described.

In testimony whereof we affix our signatures in the presence of two witnesses.

JOHN STRUTH.
CONARD HOLZAPFEL.

Witnesses:
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