

(No Model.)

2 Sheets—Sheet 1.

G. HIPWOOD.

DEVICE FOR REMOVING ICE FROM OVERHEAD WIRES.

No. 462,707.

Patented Nov. 10, 1891.

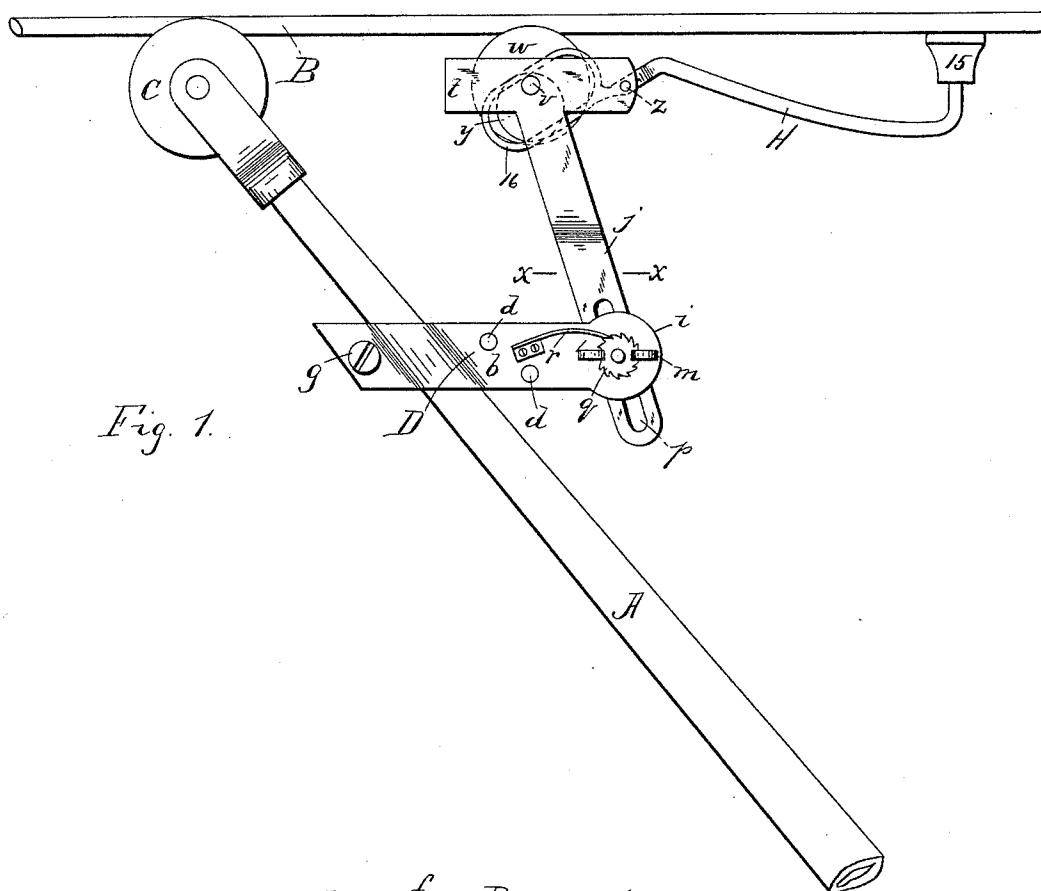


Fig. 1.

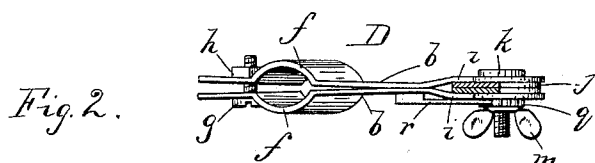


Fig. 2.

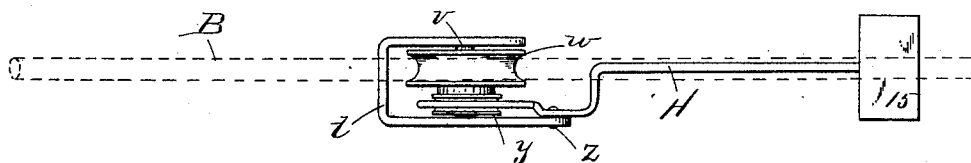


Fig. 3.

WITNESSES

Livingston Fay.

F. S. Gunning.

INVENTOR

George H. Woodward

By C.A. Shawlee,

ATTYS

(No Model.)

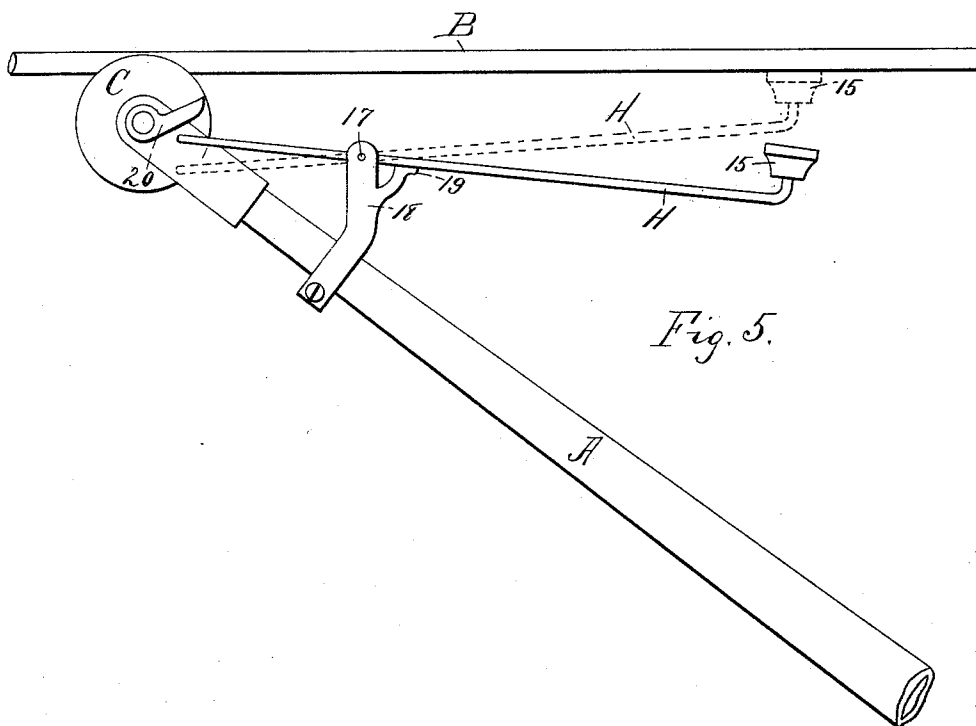
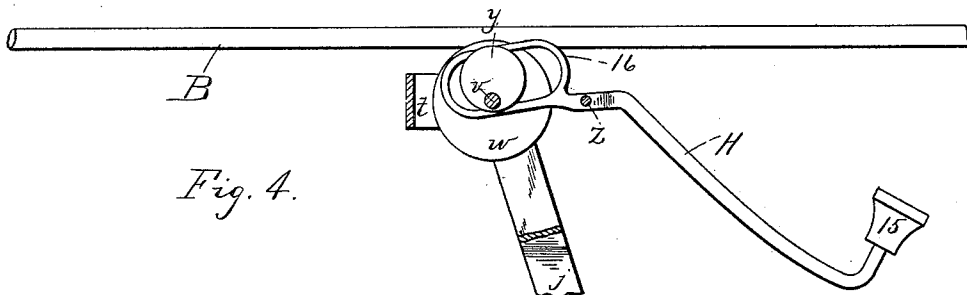
2 Sheets—Sheet 2.

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DEVICE FOR REMOVING ICE FROM OVERHEAD WIRES.

No. 462,707.

Patented Nov. 10, 1891.



WITNESSES

Ernest A. Fay.
F. S. Downing

INVENTOR

George Hipwood
By *C. A. Shaw* *Attys*

UNITED STATES PATENT OFFICE.

GEORGE HIPWOOD, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF TWO-THIRDS
TO FRANCIS F. BIBBER AND HORATIO C. BARRETT, OF SAME PLACE.

DEVICE FOR REMOVING ICE FROM OVERHEAD WIRES.

SPECIFICATION forming part of Letters Patent No. 462,707, dated November 10, 1891.

Application filed August 24, 1891. Serial No. 403,516. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HIPWOOD, of Boston, in the county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Devices for Removing Ice from the Overhead Conducting-Wires of Electric Railroads, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of a portion of a trolley-pole, showing my improved device in position; Fig. 2, a cross-section of the bracket, taken on line *x x* in Fig. 1, the pole being removed; Fig. 3, a top plan view of the device; Fig. 4, an elevation, partly in section, showing the hammer-actuating mechanism; and Fig. 5, an elevation illustrating a modification of the improvement.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

My invention relates especially to an automatically-actuated mechanism attachable to the trolley-poles of electrical street-railway cars for removing ice from the overhead conducting or trolley wire in advance of the contact of said trolley therewith; and it consists in certain novel features hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the trolley-pole, B the overhead or wire, and C the trolley-wheel, these parts being all of the ordinary construction, arrangement, and operation.

A clamp D (shown in detail in Fig. 2) comprises two plates *b*, secured together by bolts *d* and offset at *f* to receive the trolley-pole A. A bolt *g* and nut *h*, passing through the free end of said plates, secure the clamp on said pole. The opposite ends of the plates *b* are

offset slightly at *i*, and between said offset portions two vertically-arranged plates *j* are pivoted on a bolt *k* by means of a longitudinal slot *p*, rendering said plates vertically adjustable on the pivot. A thumb-nut *m*, turned onto said pivot-bolt, jams the parts against the plates *j*, locking them in any desired position. The nut is provided with ratchet-teeth *q*, in which a pawl *r*, secured to one of the plates *b*, takes. In a hub or arm *t* on the upper end of the plates *i* a shaft *v* is journaled, and on said shaft a grooved pulley *w* is mounted, said pulley being adapted to contact with the wire B in advance of the trolley-wheel C. The trolley is provided with an eccentric hub *y*. A lever H is pivoted at *z* in the head *t* forward the pulley *w*, and is provided on the outer end of its long arm with a hammer-head 15, its short arm being provided with a link 16, which works on the eccentric *y*, imparting a reciprocating movement to the lever H as the trolley rotates.

In the use of my improvement the clamp D is adjusted in suitable position on the trolley-pole A and the plates or arms *j* adjusted in said clamp and locked by the nut *m* in such position that the pulley *w* will bear tightly against the wire B. As the car advances the friction of the wire rotates said pulley and the eccentric *y* on the hub thereof imparts a hammer movement to the lever H, causing its head 15 to rapidly and forcibly strike said wire. The jar of said blow much more readily detaches the ice which may have collected thereon than is possible by scraping or similar means.

In Fig. 5 a modification is shown wherein the lever H is actuated directly from the trolley-wheel C. The lever is pivoted in this form at 17 in a clamp 18, adjustable on the trolley-pole A, and is restricted in its downward movement by a stop-arm 19 on said clamp. An arm 20 on the journal of the trolley-wheel C is in position to contact with the short arm of the lever H at each complete revolution of said trolley, throwing the hammer-head 15 against the wire in a manner which will be understood without a more explicit description.

I do not confine myself to any particular mechanism for mounting the lever or throw-

ing the same in contact with the wire in advance of the trolley-wheel.

Having thus explained my invention, what I claim is—

- 5 1. The trolley-pole, in combination with a lever pivotally supported thereon and bearing a hammer in position to contact with the overhead conducting-wire, and mechanism, substantially as specified, for actuating said
- 10 lever.
2. A device for removing ice from trolley-wires, comprising a hammer-lever mounted on the trolley-pole and operating mechanism therefor actuated by frictional contact with
- 15 said wires, substantially as described.
3. The combination of the trolley-pole, trolley-wheel, and electrical conducting-wire with a hammer-lever pivotally supported by said pole in position to engage said wire and mechanism, substantially as specified, for actuat-
- 20 ing said lever.
4. A device for removing ice from trolley-wires, comprising a hammer-lever pivotally supported on the trolley-pole, a wheel in contact with said wire, and a crank mechanism driven by said wheel and reciprocating said
- 25 lever, substantially as set forth.
5. In a device for removing ice from trolley-wires, a bracket adjustably mounted on the trolley-pole, a pulley journaled in said bracket and adapted to contact with said wire, a hammer-lever pivoted in said bracket in position to be engaged with said wire and actuated by an eccentric on said pulley, substan-
- 30 tially as described.
6. In a device for removing ice from trolley-wires, a trolley-pole and wheel, in combi-

nation with a hammer-lever pivoted on said pole, and an arm on the wheel-shaft adapted to intermittently throw said lever into contact with said wire, substantially as described. 40

7. The trolley-pole, wheel, and conducting-wire, in combination with a bracket on said pole, an arm adjustable in said bracket, a hammer-lever pivoted in said arm, and a pulley journaled in said arm in frictional contact with said wire, and an eccentric on said pulley for reciprocating said lever, substantially as described. 45

8. The trolley-wheel, pole, and conducting-wire, in combination with the lever H, pivotally supported on said pole in advance of said wheel, and mechanism, substantially as specified, for throwing said lever into engagement with said wire. 50

9. The bracket-clamp D, arm *j*, and locking mechanism, in combination with the lever H, pivoted in said arm and provided with link 16, the pulley *w*, and eccentric *y*, working on said link, substantially as set forth. 55

10. The clamp D, slotted arm *j*, and pulley *w*, in combination with trolley-pole A, the bolt *k*, ratchet-nut *m*, and pawl *r*, arranged to operate substantially as specified. 60

11. A device for removing ice from trolley-wires, comprising a movable projection on the trolley-pole, and mechanism for percussively contacting said projection with the trolley-wire in advance of the trolley-wheel contact. 65

GEORGE HIPWOOD.

Witnesses:

O. M. SHAW,
F. S. DRENNING.