

No. 679,492.

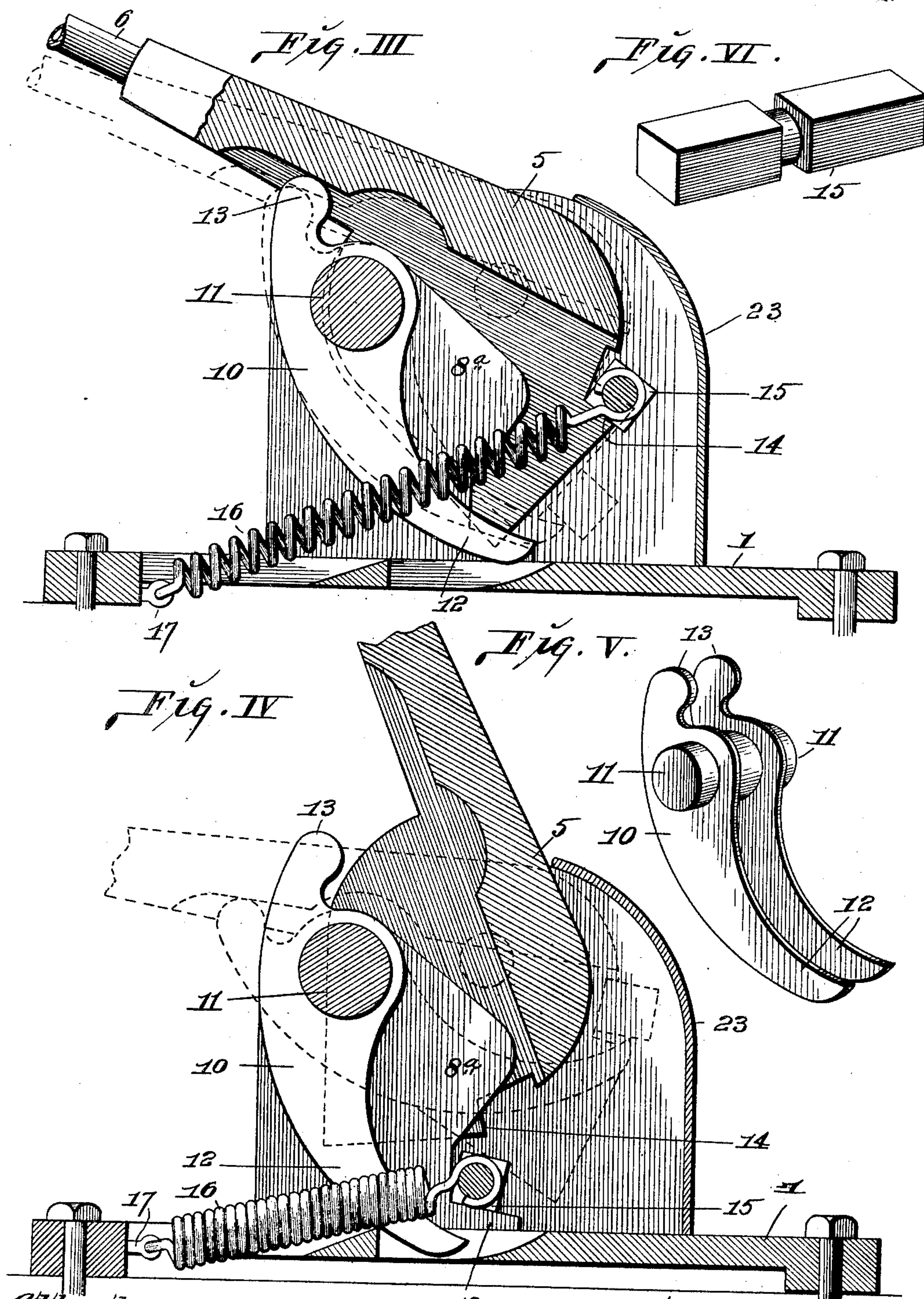
Patented July 30, 1901.

J. H. BECKERT.
TROLLEY FOR ELECTRIC CARS.

(No Model.)

(Application filed Sept. 28, 1900.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

JOHN H. BECKERT, OF ST. LOUIS, MISSOURI.

TROLLEY FOR ELECTRIC CARS.

SPECIFICATION forming part of Letters Patent No. 679,492, dated July 30, 1901.

Application filed September 28, 1900. Serial No. 31,343. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. BECKERT, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Trolleys for Electric Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a construction whereby when the trolley arm or harp jumps or becomes disengaged from the overhead wire it automatically drops to a position beneath the cross-wires, so as not to come in contact with the latter.

The object of my invention is to provide a construction of this character which will be inexpensive in construction, simple and effective in operation, which will not be unsightly, and which can be easily and quickly restored to its normal or working condition after the arm has automatically dropped upon becoming disengaged from the overhead wire.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a perspective view of my improved device, partly broken away. Fig. II is a vertical section taken on line II II, Fig. I. Fig. III is a vertical section taken on line III III, Fig. I. Fig. IV is a view corresponding to Fig. III, but showing the parts in a different position. Fig. V is a perspective view of the restoring-lever. Fig. VI is a perspective view of the spring-block.

Referring to the drawings, 1 represents a suitable base, from which depends a neck 2, having a flange or collar 3, designed to be connected to the usual turn-table commonly in use for supporting the trolley-arm. The base is provided with upwardly-extending sides 4, between which is a space of sufficient width to receive the bifurcated head 5 of the trolley-arm 6. The head 5 is provided with trunnions 7, journaled in the sides 4, so that the arm 6 is free to swing in a vertical plane. The inner faces of the sides 4 are preferably formed with narrow upwardly-extending portions 8, between and beneath which is a space 9, that receives a lever 10, having trunnions 11 journaled in sockets formed in the inner

faces of the sides 4. The sides 4 are grooved out to receive the enlarged forks of the head 5, as shown in the drawings, these grooves forming inner portions 8^a (of which the projections 8 are a part) and outer portions 8^b, between which the flat forks of the head of the trolley-arm fit, so that the arm is firmly supported and guided in its vertical movement.

The lever 10 is preferably made in the form of two arms or parts united rigidly by and preferably cast in one part with the trunnions 11. The lower end of the lever 10 is preferably curved, as shown at 12, Fig. V, and the upper end is preferably rounded off, as shown at 13, Fig. V. The back of the head 5 of the trolley is provided with a notch forming a shoulder 14, upon which seats a block 15, to which is connected one end of a coil-spring 16, the other end of which is made fast to the base 1, as shown at 17. The spring acts to support the outer end of the trolley-arm and hold it yieldingly against the overhead wire, allowing the outer end of the trolley-arm to move vertically to accommodate itself to the elevation of the overhead wire. The outer end of the trolley-arm is thus free to vibrate in a vertical plane, and the spring will hold the arm against the wire under all normal conditions without the block 15 becoming disengaged from the shoulders 14. In the event, however, of the trolley-arm being disengaged from the overhead wire it will be drawn by the spring 16 to the position shown in full lines, Fig. IV, when the block 15 will slip off of the shoulders 14 and the arm will drop by gravity to the position shown in dotted lines, Fig. III, and when it is in this position the upper end of the arm will be beneath the plane of the cross-wires, so that the latter will not be struck and injured or destroyed by the trolley-arm. When the block 15 leaves the shoulders 14, it drops onto extensions 19 of the inner parts 8^a of the sides 4, as seen in Fig. IV, and when in this position it lies in the path of the lever 10.

When the trolley-arm drops to the position shown in Fig. III, the conductor has simply to take hold of the trolley-rope and pull the upper end of the trolley-arm downwardly to the position shown by dotted lines in Fig. IV. By so doing he causes the lever 10 to be

turned on its trunnions, owing to the arm being forced against the upper end of the lever 10. This movement of the lever causes its lower end to engage the block 15 and move it upwardly against the tension of the spring 16, and when the block has been raised to a position opposite the shoulders 14 on the head of the trolley-arm the spring will draw the block forwardly over the shoulders, or to the position shown in Fig. III, and upon the pressure being released from the outer end of the trolley-arm the latter is again under the influence of the spring 16, which will draw the outer end of the trolley-arm in an upwardly direction, and the conductor, still having hold of the trolley-rope, directs the pulley into contact with the overhead wire.

The parts are so disposed that when the trolley-arm drops when the block 15 leaves the shoulders 14 it will engage the upper end of the lever 10 and cause the lower end of the lever to be moved into engagement with the block 15, the spring 16 being thus brought into action to check the downward movement of the upper end of the trolley-arm, and the spring thus acts as a cushion-stop to check the fall of the trolley-arm.

When the upper end of the trolley-arm becomes disengaged from the overhead wire, its upward movement is checked by the inner faces 20 of the head of the arm coming into contact with the vertical wall 21 of the sides 4, formed by the grooves that separate the inner from the outer portions of the sides 4, and to prevent a sudden jar of the trolley-arm as it is thus stopped in its upward movement I provide the walls 21 with cushions 22, formed of rubber set into the walls 21.

The space between the two parts of the sides 4 and which is occupied by the head of the trolley-arm is closed to exclude rain and snow by means of a plate 23.

The projections 8 serve as a stop to limit the downward movement of the trolley-arm when pulled by the conductor, the height of these projections being such that the trolley-arm will come against them just after the block 15 has been raised sufficiently high to engage the shoulders 14.

My invention may to a certain extent be practiced by omitting any means for restoring the trolley-arm to the action of the spring 16—that is to say, my invention may in a measure be carried out by using only that part which causes the trolley-arm to be released from the tension of the spring 16 when the arm leaves the overhead wire, so that it will fall by gravity to a position beneath the cross-wires.

I claim as my invention—

1. The combination with a trolley-arm, a notch in the head thereof and means under tension directly engaging said notch to support the trolley-arm only when said arm is in engagement with its conductor.

2. The combination with a trolley-arm, an

integral notched head extending below the pivot of said arm, and means under tension directly engaging said notched head whereby the trolley-arm is under the influence of said tension means only when in engagement with its conductor.

3. The combination with a trolley-arm, a head depending therefrom below the pivot of said arm and means directly engaging said head only when the arm is in contact with its conductor.

4. The combination with a trolley-arm, a head depending therefrom below the pivot of said arm, a spring directly engaging said head for holding said arm in contact with its conductor, and means to release the arm from the action of said spring when not in contact with its conductor.

5. The combination with a trolley-arm, a head depending therefrom below the pivot of said arm, a spring member having direct engagement with said head and means for moving said member into engagement with said head.

6. The combination with a trolley-arm, a shoulder on the head of said arm, a spring adapted to engage said shoulder only when the arm is in contact with its conductor and means to hold the spring in a position to act as a cushion-stop to check the fall of the trolley-arm when said arm is released from the action of the spring.

7. The combination of a trolley-arm, the head depending below the pivot of said arm and provided with a shoulder, a spring provided with means for engaging with the shoulder of the head of the trolley-arm, and a pivoted lever adapted to be engaged by the trolley-arm and to move the spring into engagement with said shoulder, substantially as set forth.

8. The combination of a trolley-arm, the head depending below the pivot of said arm and provided with a shoulder, a spring provided with a block engaging said shoulder, and a pivoted lever adapted to be engaged by the trolley-arm and to move said block into engagement with said shoulder, substantially as set forth.

9. The combination of a trolley-arm having a shouldered head below its pivot, a spring provided with a block for engaging said shoulder, and a pivoted lever adapted to be engaged by the trolley-arm to move said block into engagement with said shoulder; the parts being so disposed that when the trolley-arm becomes disengaged from an overhead wire, said block will slip off of said shoulder, and when the trolley-arm falls it will engage said lever and force the lower end thereof against said block so that the spring will act as a cushion to check the descent of the trolley-arm, substantially as set forth.

10. The combination of a base, provided with grooved sides, a trolley-arm, the bifurcated head of which fits between said sides

with its forks located in said grooves, a spring provided with a block engaging shoulders on the head of the trolley-arm, and a lever pivoted to said sides and which is adapted to be engaged by the trolley-arm to move said block into engagement with said shoulder, substantially as set forth.

11. The combination of a base having sides formed with inner parts 8^a and outer parts 8^b, a trolley-arm having a bifurcated head, the forks of which fit between the inner and outer parts of said sides, a spring provided with a block adapted to engage shoulders on the head of the trolley-arm, and a lever pivoted between said sides and which is adapted to be engaged by the trolley-arm and move said block into engagement with said shoulders, substantially as set forth.

12. The combination of a trolley-arm, a head depending below the pivot of the arm, a spring for supporting the outer end of the trolley-arm by engaging the said head, means for releasing the trolley-arm from the tension of said spring, and means adapted to be engaged by the trolley-arm to restore the action

of the spring upon the trolley-arm, substantially as set forth.

13. The combination of a trolley-arm, a head depending below the pivot of said arm, a spring having direct engagement with the head, thereby supporting the outer end of the trolley-arm through said head, and means for releasing the trolley-arm from the action of the spring when the trolley-arm leaves an overhead wire, so that the trolley-arm will drop by gravity to a position beneath the cross-wires.

14. A trolley-arm, a notched head depending from the pivot of the arm in combination with a supporting-spring provided with means for directly engaging said notch.

15. A trolley-arm, a notched head depending from the pivot of the arm, in combination with a supporting-spring and a cross-piece connected to the spring for directly engaging said notch.

JOHN H. BECKERT.

In presence of—

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