(No Model.)

J. J. HOPPES.

TROLLEY CATCHER.

No. 483,689. Patented Oct. 4, 1892.

FIG. 1.

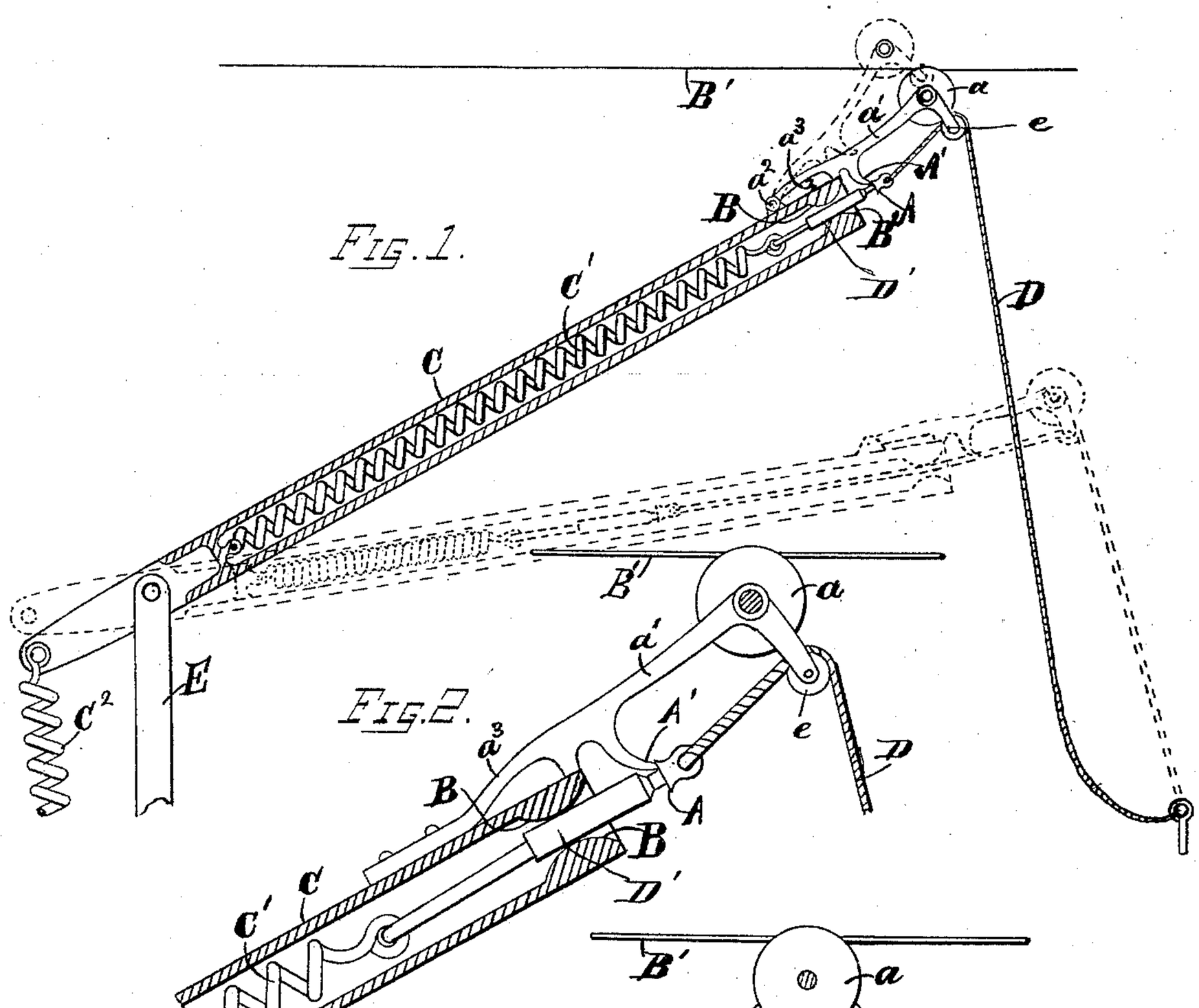

FIG. 2.

FIG. 3.

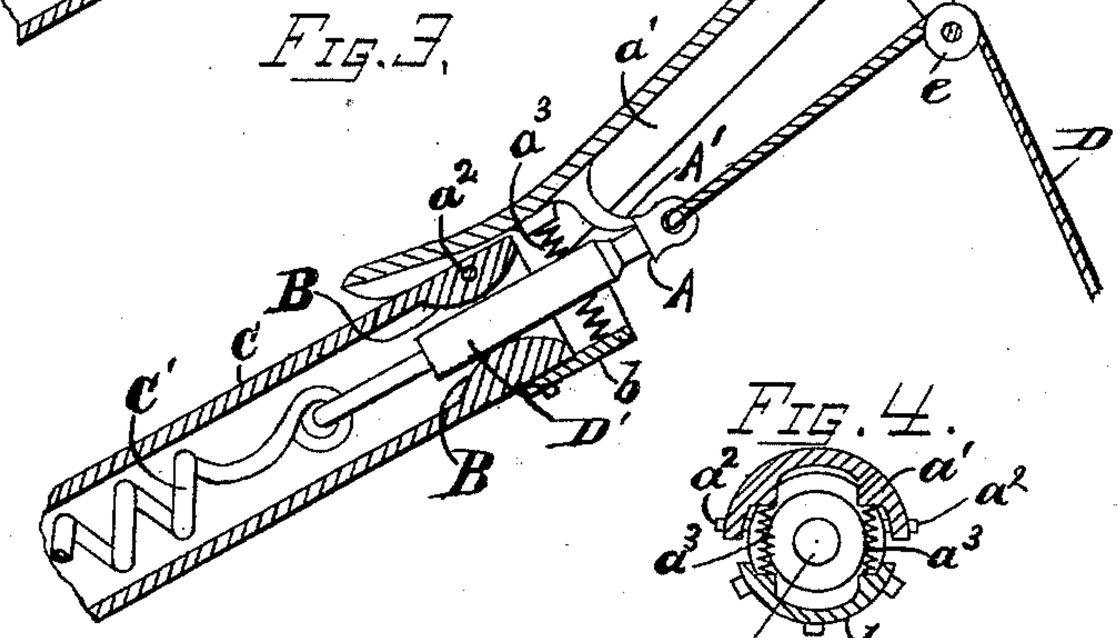

FIG. 4.

WITNESSES:

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JOHN J. HOPPES, OF SPRINGFIELD, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE THOMSON-HOUSTON ELECTRIC COMPANY, OF CONNECTICUT.

TROLLEY-CATCHER.

SPECIFICATION forming part of Letters Patent No. 483,689, dated October 4, 1892.

Application filed February 24, 1891. Serial No. 382,593. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. HOPPES, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Electric Contact Devices, of which the following is a specification.

My invention relates to improvements in electric contact devices, and especially relates to contact devices adapted for use with overhead conductors in street-railroads.

The object of my invention is to provide novel means for automatically withdrawing an electric contact device from its conductor, so as to clear the said conductor and its supports in the event that the contact or trolley wheel becomes accidentally displaced with reference to the conductor in connection with which it operates.

To this end my invention consists in a jointed or flexible trolley-arm a portion of which is adapted to assume an unusual position, which will set in operation suitable mechanism to withdraw said trolley-arm from its normal position to a position from and clear of the conductor and conductor-supports.

My invention further consists in the various constructions and combinations of parts hereinafter described, and set forth in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1 is a side elevation, partly in section, of a device embodying my invention. Fig. 2 is an enlarged sectional view of the end of the same, showing a slight modification. Fig. 3 is a similar view with the parts further modified. Fig. 4 is a transverse section of Fig. 3.

Like parts are indicated by similar letters of reference in the several views.

In the said drawings, E represents a suitable supporting-standard, to which is pivoted a trolley-arm C, adapted to be held in its normal position by a spring C^2, so as to force and retain the trolley-wheel a in contact with an electric conductor B^2. The contact or trolley wheel a is journaled and supported in a suitable auxiliary frame a', pivoted at a^2 to the arm C, so as to form an extension of said arm capable of an independent movement with reference thereto about the pivot a^2, a small spring a^3, located between the frame a' and the arm C, adapted to move said frame a' about its pivotal center, being adapted to produce an independent movement of said frame with reference to said arm when the pressure is removed from said frame or from the contact device, as indicated by dotted lines in the upper part of Fig. 1.

D is a cord or cable connected to the trolley-arm for raising and lowering the same with reference to the conductor B′. Instead of having this cord or cable D connected directly to the trolley-arm, I pass it over a suitable sheave or pulley e, supported in the auxiliary frame a', preferably below the trolley-wheel a, and connect the end thereof to a movable plunger or connecting-rod D′, which is extended into the trolley-arm C, which is made hollow and provided at the outer end with rounded faces or bearings B B. This plunger or connecting-rod D′ is connected at the other end to a spring C′ within the arm C and preferably extending almost the entire length thereof. A small projection A′ on the auxiliary frame a' is adapted in the normal position of said frame to engage a shoulder A on the end of the plunger D′, and thus hold the spring C′ in an extended position, as shown in full lines in Fig. 1.

The cord or cable D is secured at its lower end to the car or other device to which the trolley-arm is secured, with just enough slack to permit the trolley-wheel a to rest slightly above the conductor B′. In the event that the trolley-wheel runs off the conductor or otherwise becomes displaced the independent movement of the auxiliary frame caused by the small spring a^3 withdraws the projection A′ from the plunger D′. The spring C′ is thus released, taking up the slack of the cord D and drawing the same into the trolley-arm, thus carrying said trolley-arm down to the position indicated by dotted lines in Fig. 1, the increased leverage at the outer part of the trolley-arm being sufficient to overcome the tension of the spring C^2, and thus force said arm positively down to the position indicated.

In Fig. 2 the pivot a^2 is dispensed with and

the spring a^3 is formed as a part of the frame a'. In Fig. 3 two springs a^3 are used, located on opposite sides of the plunger D′, an extension b being preferably provided on the end of the trolley-arm to form a bearing-seat for said springs. The operation, however, is the same in each case. The independent movement of the auxiliary frame or outer end of the trolley-arm causes the release of the operating mechanism, which in this case is the spring C′, thus drawing in the cord D and drawing the trolley-arm and its contact-wheel away from the conductor. By drawing down on the cord D until the arm comes against a positive stop the plunger D′ is drawn out to its normal position, thus extending the spring C′, the projection A′ engages with said plunger, and the parts are again ready for operation. As long as the pressure is on the frame a', either through the cord D or by the contact of the wheel a against the conductor B′, the parts are in their normal position, with the spring C′ extended. Means are thus provided by which the trolley-arm may be controlled and operated at any time by the cord D for changing position or otherwise without setting in operation the lowering mechanism. In the event that the pressure is accidentally released by the trolley-wheel A leaving the track the withdrawing mechanism is set into operation and carries the arm free from the conductor and its supports.

It is obvious that the arrangement of the withdrawing mechanism may be variously modified without departing from the spirit of my invention. Different forms of springs or their equivalents or different arrangements thereof may be employed, such as will readily suggest themselves to the mind of a mechanic, and I do not, therefore, limit myself to the constructions shown and described; but

I claim as my invention—

1. The combination, with a trolley-arm in two or more parts adapted to move in relation to each other, said trolley-arm being adapted to be held in its normal position by a yielding pressure to contact with the conductor, of a separate connection from said trolley-arm to a stationary part and an operating mechanism adapted to shorten said stationary connection, and thus withdraw said trolley-arm from its normal position, said operating mechanism being adapted to be set into operation by the relative movement between the parts of the trolley-arm, substantially as specified.

2. A trolley-arm provided with a broken or flexible portion having an independent movement with reference to the solid or main portion, a flexible cord of a definite length connected at one end to a stationary part and at the other to operating mechanism adapted when released to shorten said cord, and thus withdraw said trolley-arm, and a catch to release said mechanism by an independent movement of said flexible portion, substantially as specified.

3. An electric trolley-arm having a flexible or yielding portion, a spring to hold said portion yieldingly against an electric conductor, and thus move the flexible portion of said arm to its normal operative position, an independent connection to said trolley-arm adapted when shortened to withdraw said trolley-arm against said spring, and an operating mechanism attached to said connection, and means for releasing said operating mechanism by an independent movement of the flexible portion of said arm to cause the same to shorten said independent connection, substantially as specified.

4. The combination, with a trolley-arm having an outer movable part yieldingly connected thereto and held in a normal position by the pressure of an actuating-spring to force said arm in contact with an overhead conductor, of an operating-cord of a limited length connected rigidly at one end, and at the other to a spring on said trolley-arm, to a stationary part and means for releasing said spring to shorten said cord by an independent movement of the outer portion of said arm, substantially as specified.

5. The combination, with a trolley-arm comprising parts adapted to move in relation to each other, of means for holding said trolley-arm yieldingly against a conductor to bring said parts in their normal positions, an operating-cord rigidly connected at one end to a stationary part and at the other to a movable plunger on said trolley-arm, and means in said trolley-arm to produce a movement of said plunger to shorten said cord, and thus lower said arm when released by the relative movement of the parts of said arm, substantially as specified.

6. The combination, with a pivoted trolley-arm and a spring adapted to hold the same yieldingly in contact with an overhead conductor, of an operating-cord connected at one end to a spring supported on said trolley-arm and at the other to a stationary part from which said trolley-arm is supported, and means on said trolley-arm for releasing said spring when the contact or trolley wheel has moved to an unusual position, substantially as specified.

7. The combination, with a yielding trolley-arm having an operating-cord connected at one end to a spring supported on said trolley-arm and at the other to a stationary part from which said trolley-arm is supported, said spring being normally under tension and adapted when released to shorten said cord, of means for releasing said spring when the contact or trolley wheel is moved to an unusual position, substantially as specified.

8. The combination, with a pivoted hollow trolley-arm normally held in contact with an overhead conductor by a yielding pressure, a spring in said trolley-arm, a plunger connected to one end of the spring, and a catch mechanism supported on said trolley-arm and engaging said plunger, so as to hold said spring normally under tension, of a separate

independent connection from said plunger to a stationary part from which said trolley-arm is supported, and means for releasing said spring and thus shortening said connection when the contact of said trolley-arm is moved to an unusual position, substantially as specified.

9. The combination, with a trolley-arm having an electric contact device supported by a yielding pressure in contact with an overhead conductor, of a spring mechanism on said arm normally under tension, an independent connection from said spring mechanism to a stationary part from which said trolley-arm is supported, and means for releasing said spring mechanism to shorten said connection when said contact is moved to an unusual position, substantially as specified.

In testimony whereof I have hereunto set my hand this 17th day of February, A. D. 1891.

JOHN J. HOPPES.

Witnesses:

PAUL A. STALEY,

CHAS. I. WELCH.