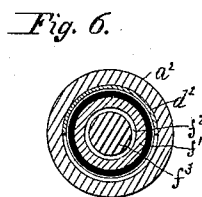
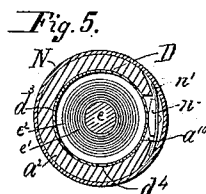
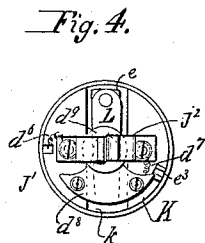
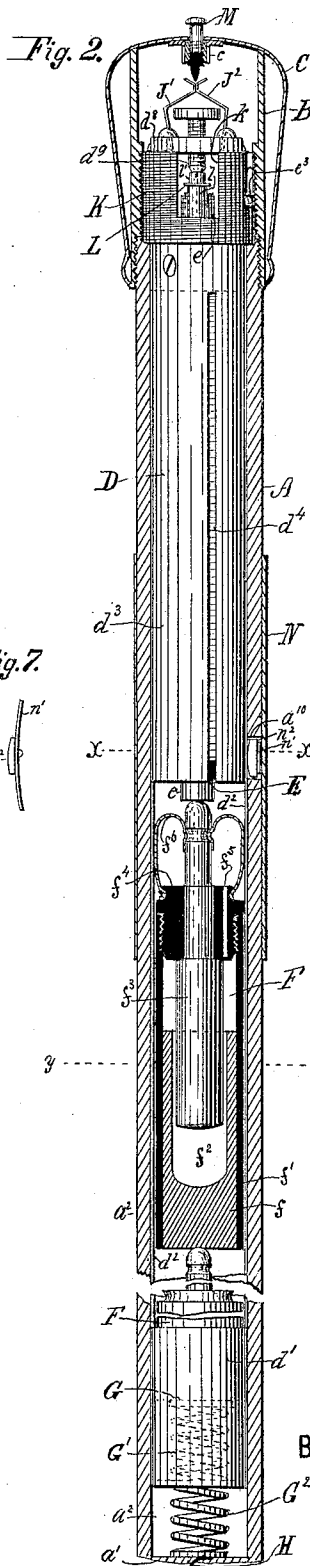
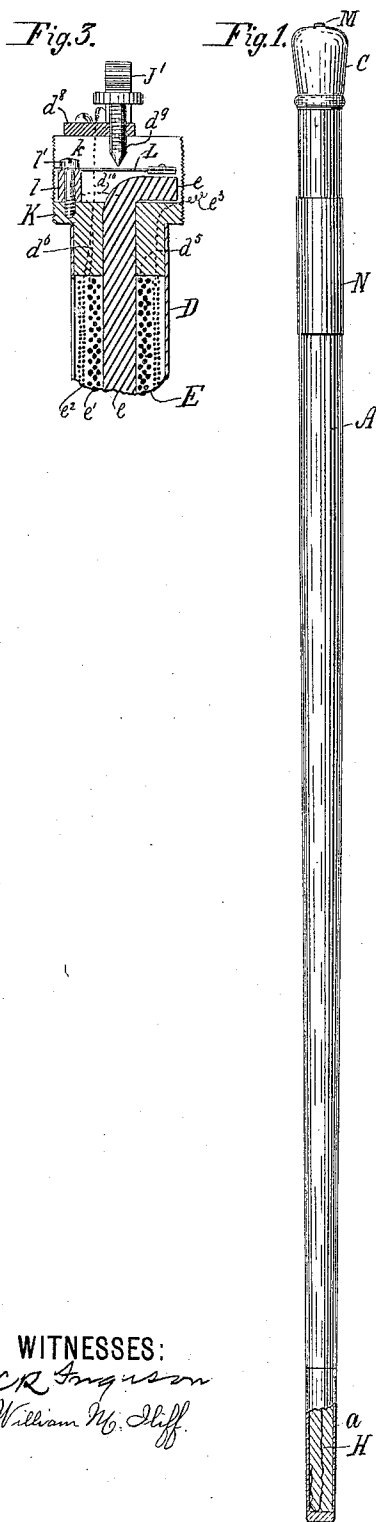


(No Model.)

A. W. & A. H. ROOVERS.
ELECTRIC CANE.

No. 465,949.

Patented Dec. 29, 1891.



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NEW YORK.

ELECTRIC CANE.

SPECIFICATION forming part of Letters Patent No. 465,949, dated December 29, 1891.

Application filed March 13, 1891. Serial No. 384,923. (No model.)

To all whom it may concern:

Be it known that we, ALFRED W. ROOVERS and ALEXANDER H. ROOVERS, both of Brooklyn, Kings county, and State of New York, have invented a certain new and useful Improvement in Electric Canes, of which the following is a specification.

Our improvement relates to canes such as are carried in the hand, frequently called "walking-sticks," although it may be applied to various articles of similar character.

We will describe a cane embodying our improvement, and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a side view of a cane embodying our improvement; the lower part being shown in section. Fig. 2 is a central vertical section of a portion of such a cane; but the parts inclosed by it are not all shown in section. Fig. 3 is a central vertical section of the upper part of the cane, taken in a plane at right angles to the vertical plane of Fig. 1. Fig. 4 is a top view of parts arranged in the upper part of the cane. Fig. 5 is a horizontal section taken at the plane of the dotted line $x x$, Fig. 2. Fig. 6 is a horizontal section taken at the plane of the dotted line $y y$, Fig. 2. Fig. 7 is a top view of certain parts whereby electrical contact is established.

Similar letters of reference designate corresponding parts in all the figures.

A designates a cane made of wood or any other suitable material, and here shown as having a lower portion a' made solid and an upper tubular portion a^2 . The lower end may be provided with a metal ferrule a . The upper extremity is surmounted by a metal shell B and a cap-piece C, which may also be made of metal. As here shown, the shell B is internally screw-threaded and fastened to the upper end of the cane A by being screwed upon the same. The cap-piece C may be fastened to the shell by solder or otherwise.

D designates a metallic shell having a lower cylindric portion d' , an upper semi-cylindric portion d^2 , and a top portion of cylindric form d^3 , the latter being provided with a longitudinal slot d^4 . In the upper part of this shell is an induction-coil E. In the lower portion are a number of electric batteries F.

We have shown two electric batteries arranged one in the lower cylindric part d' of the shell and another arranged just above and supported by the first. The lower battery F rests upon a plate G, arranged within the cylindric portion d' of the shell and supported by a spring G', also arranged therein. The office of the spring G' is to force the batteries into close electrical contact and the upper battery into contact with one end of the core e of the induction-coil E. Each battery, as here shown, consists of a cylindrical carbon lower part f , fitted in a hard-rubber shell f' and receiving within a cavity f^2 , formed in its upper portion, a zinc bar f^3 . This zinc bar has its neck fitted into a cap-piece f^4 , which, as here shown, is screwed into the shell f' . Any suitable exciting solution is arranged in the cavity f^2 of the carbon part f , and to this the zinc bar will be exposed. A hole f^5 in the cap-piece permits the gases to escape. The escaping gases, however, are precluded from escaping into the shell D or into the part a^2 of the cane A by means of a soft-rubber hood f^6 , fastened in a groove formed in the exterior of the upper portion of the cap-piece and surrounding the groove formed in the upper end of the zinc bar f^3 . As the upper end of the zinc bar f^3 of the lower battery contacts with the carbon element f of the battery immediately above it, the batteries will be in circuit.

It will of course be obvious that the batteries are by their hard-rubber shells insulated from the metal shell D.

The carbon element f of the lower battery contacts with the metal plate G, and the circuit is continued through this plate and through the spring G' to the tube D. The tube D has another metal spring G² attached to it, and this extends from the tube to the bottom of the upper tubular part a^2 of the cane. From the spring G² a wire H extends through the lower part a' of the cane to the metal ferrule a thereof. Of course the tube D is an electrical conductor.

The spring G² causes the lower battery F to have its carbon element in electrical communication with the earth whenever the cane touches the earth.

The induction-coil E has a core e , a primary coil e' , wound around the core, and a

secondary coil e^2 , wound outside the primary coil. The primary coil at one end connects with the shell D at the point d^5 and at the other end is connected to a wire d^6 , which connects with a wire extending from one end of the secondary coil e^2 , and also connects with a metallic contact-piece J' . Opposite the contact-piece J' is a metallic contact-piece J^2 . Both these contact-pieces are resilient and normally will impinge against each other. They are mounted upon a block K of insulating material, which is of cylindric form and externally screw-threaded to engage with a screw-thread formed inside the shell B. A notch or cross-slot k is formed in the top of this block K. The upper end of the core e of the induction-coil is extended up through a hole formed vertically in the lower portion of the block K and is bent over horizontally into the notch k of said block. The contact-piece J^2 is connected by a wire d^7 with a metal plate d^8 , which is fastened to the top of the block K. In the plate d^8 is fitted a metal screw d^9 , whose end extends down into the notch k of the block K. Below this screw and in the notch k of the block K is a vibrator L, which is mounted upon a small metal post l , which rests on the bottom of the notch and is fastened in place by a screw l' , which also fastens the vibrator in its place. The free end of the vibrator extends over the upper bent end of the core e of the induction-coil. Obviously the vibrator vibrates between the upper bent extremity of the core e of the induction-coil and the screw d^9 . From the metal post l a wire d^{10} extends to the core of the induction-coil.

The upper portion of the cap-piece C is provided with a socket c , in which is fitted friction-tight a pin M, which may be made of metal at the upper part, but has its lower extremity formed of hard rubber or other insulating material. By depressing this pin the contact-pieces J' J^2 may be separated and held apart. The rising of the pin allows the contact-pieces to come together again. This is very much preferable to pushing the pin inward for the purpose of rendering the apparatus operative, because it might accidentally be pushed inward, but is not liable to be pulled outward. Normally the pin will be pressed down, so as to separate the contact-pieces J' J^2 , and while the latter are separated there will be no current. To make the electrical apparatus operative, the cane will be placed upon the ground and the pin pulled upward. When this is done, a shock will be obtained from the induction-coil. Of course it will be better to place the bottom of the cane in some moist place to obtain good contact.

On the outside of the upper part a^2 of the cane is a vertically-sliding metal shell N, which is adjusted for the purpose of varying the current or shock produced by the cane. Opposite this shell N an opening a^{10} is formed through the wire of the upper tubular part a^2 of the cane, and lying in this opening is a

loose piece of spring metal n' , which will press firmly against the interior of the shell N, and a piece of metal n^2 , attached to the spring and pressing against the tube D. This establishes the connection between the tube D and the shell N without interfering with the sliding adjustment of the latter.

By unscrewing the shell B the tube D and all the parts connected with it and contained in it may be removed, because the upper end of the tube is secured by screws to the block K. If it is not desired to provide for removing all the parts together, the tube D may be dispensed with, and a metal strip fastened to the inside of the upper tubular part a^2 of the cane may be used in its place.

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

1. The combination, with a cane having a tubular upper part, of a conductor arranged within this tubular upper part, an induction-coil arranged in said tubular upper part, a battery arranged in said tubular upper part, a spring for holding the battery in contact with the core of the induction-coil, and electrical connections, substantially as specified.

2. The combination, with a cane having a tubular upper part, of a metallic tube arranged within this tubular upper part, an induction-coil arranged in said tubular upper part, a battery arranged in said tubular upper part, and electrical connections, substantially as specified.

3. The combination, with a cane having a tubular upper part, of a conductor arranged within this tubular upper part, an induction-coil arranged in said tubular upper part, and a battery arranged in said tubular upper part, with one electrode in contact with the core of the induction-coil, substantially as specified.

4. The combination, with a cane having a tubular upper part, of a conductor arranged within this tubular upper part, an induction-coil arranged in said tubular upper part, a battery arranged in said tubular upper part, with one electrode in contact with the core of the induction-coil, and a spring-support for holding the battery in position, substantially as specified.

5. The combination, with a cane having a tubular upper part, of a conductor arranged within this tubular upper part, an induction-coil and battery arranged in said tubular part, a slide outside the cane adjustable lengthwise thereof, and a connection bearing against the conductor inside the tube and the slide outside, while permitting of the adjustment of the latter, substantially as specified.

6. The combination, with a cane having a tubular upper part, of a conductor arranged within this tubular upper part, an induction-coil and battery arranged in said tubular upper part, contact-pieces, and a part extending through the top of the cane, whereby they may be separated or allowed to come together, substantially as specified.

7. The combination, with a cane having a

tubular upper part, of a conductor arranged within this tubular upper part, an induction-coil and battery arranged in said tubular upper part, contact-pieces, and a part extending
5 through the top of the case and having a lower extremity of insulating material, which will normally keep said contact-pieces separated and which part will have to be moved upward by pulling it in order to allow the contact-pieces to come together and render the induction-coil operative, substantially as specified.
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8. In a battery, the combination, with the

shell, the perforated cap-piece, and a pole or element projected through said cap-piece, of
15 a hood of soft rubber secured to the cap-piece and also secured to the projected end of the pole or element, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of
20 two subscribing witnesses.

ALFRED W. ROOVERS.

ALEXANDER H. ROOVERS.

Witnesses:

S. O. EDMONDS,

WM. M. ILIFF.