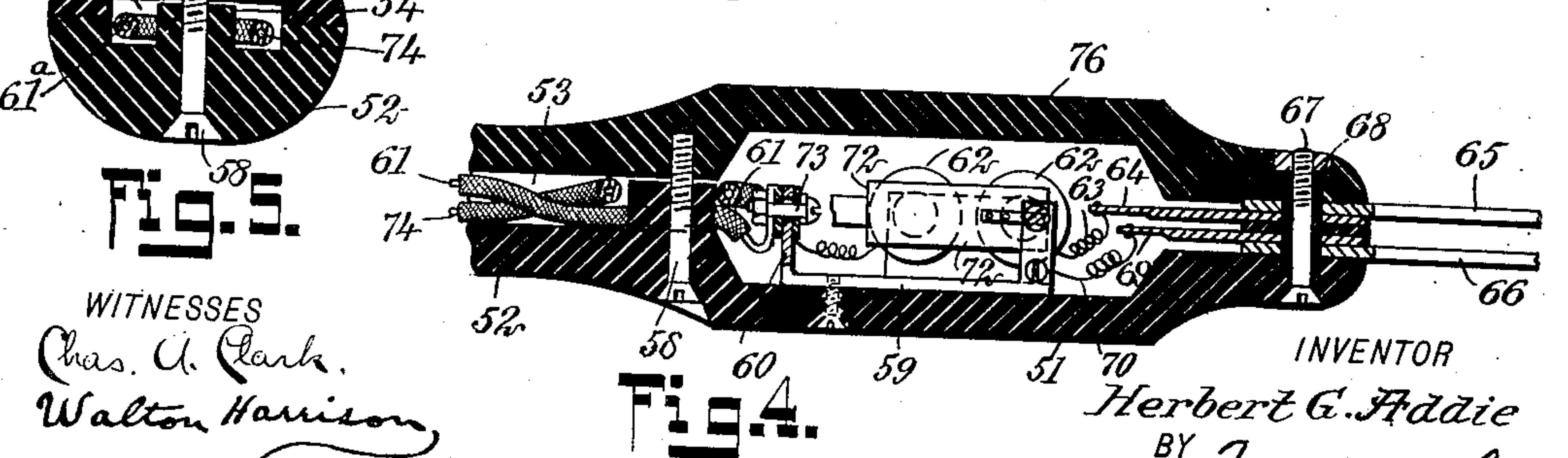
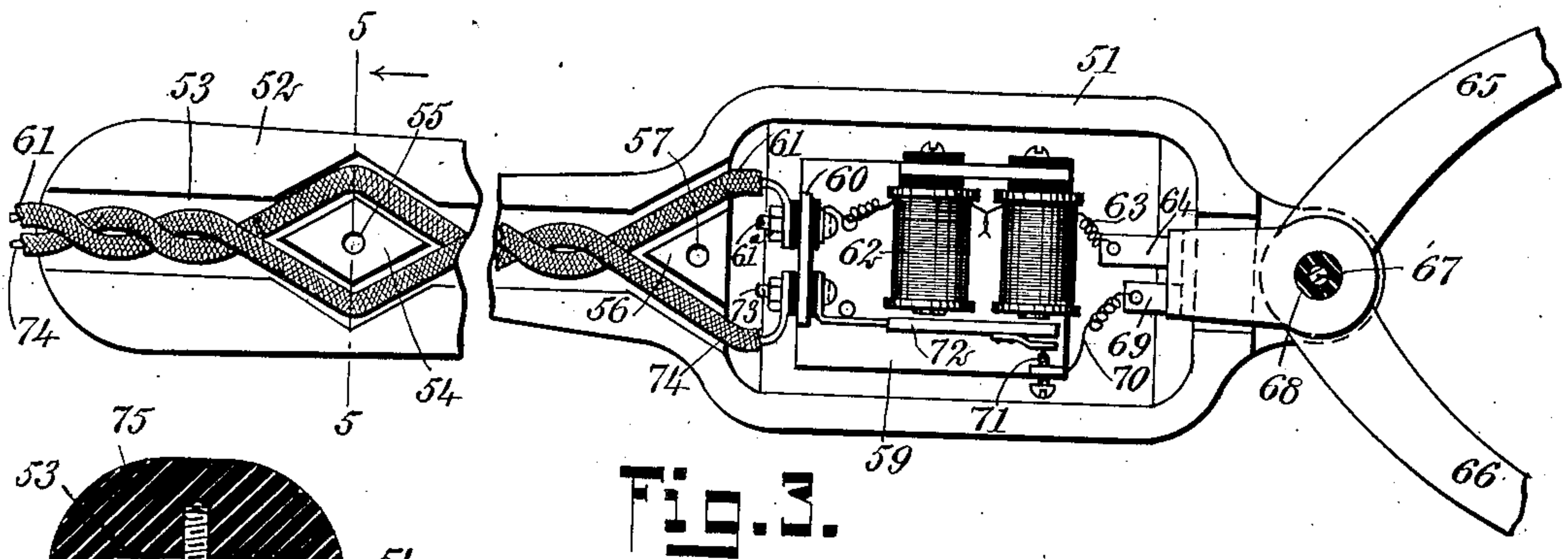
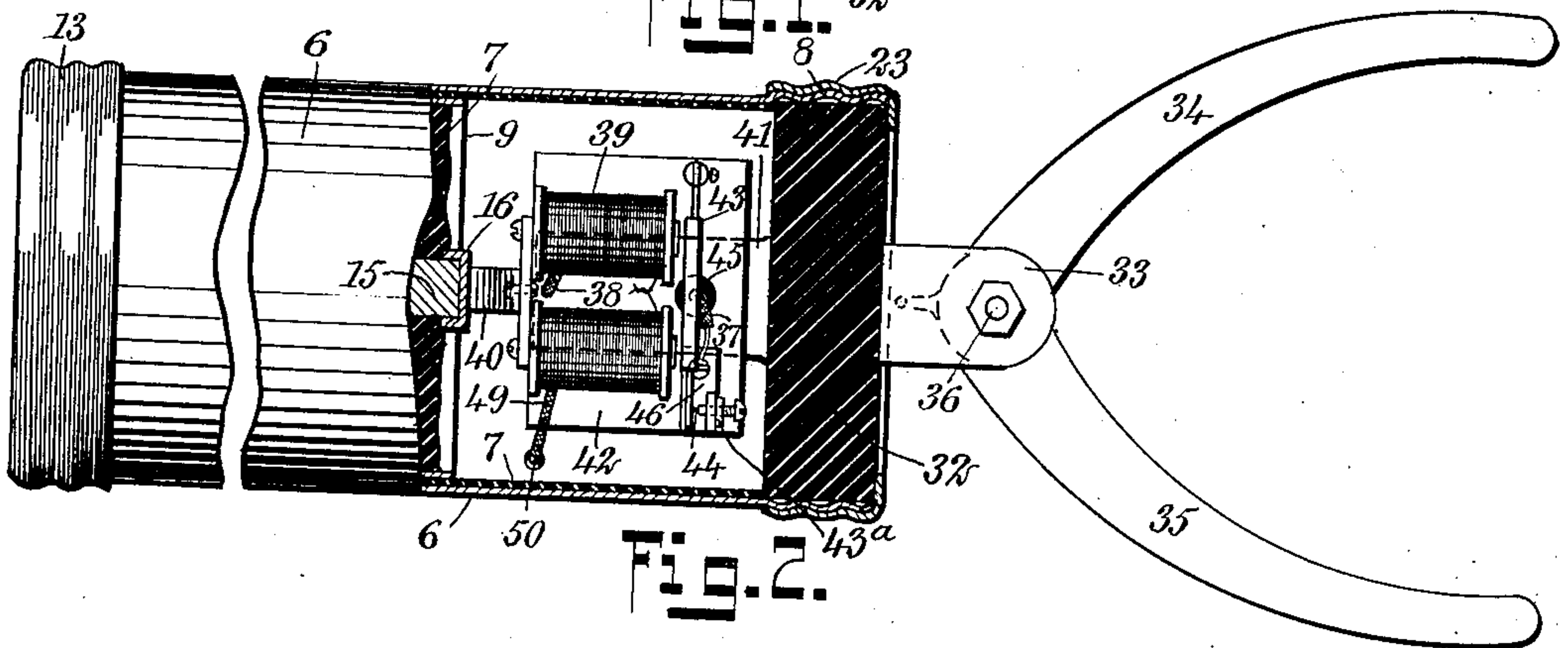
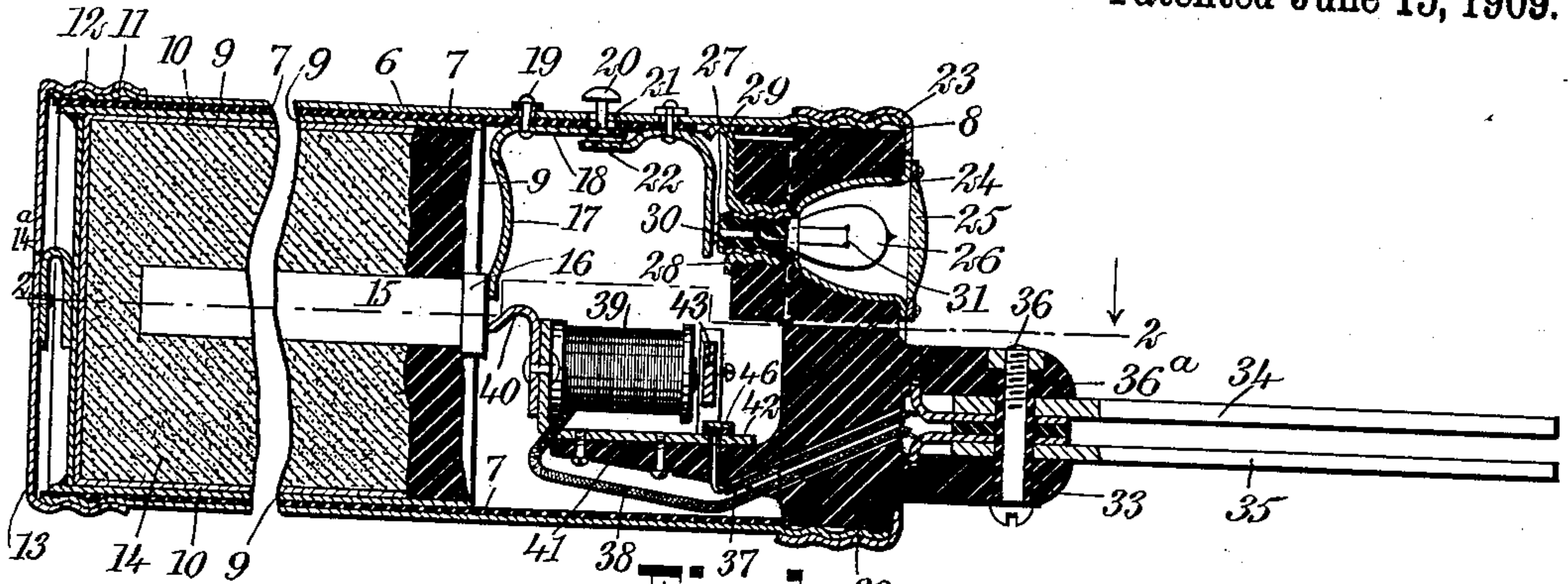


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ELECTRIC TESTING INSTRUMENT.  
APPLICATION FILED FEB. 5, 1908.

925,412.

Patented June 15, 1909.



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# UNITED STATES PATENT OFFICE.

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## ELECTRIC TESTING INSTRUMENT.

No. 925,412.

Specification of Letters Patent.

Patented June 15, 1909.

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*To all whom it may concern:*

Be it known that I, HERBERT GUY ADDIE, a citizen of the United States, and a resident of Cresco, in the county of Howard and State of Iowa, have invented a new and Improved Electric Testing Instrument, of which the following is a full, clear, and exact description.

My invention relates to testing instruments and admits of general use, but applies more particularly to a type of such instruments used for testing fuses and made in neat form to be carried in the pocket and containing its own supply of current for making the test.

In the accompanying drawings forming a part of this specification I show two forms of my invention, but it should be understood that I do not limit myself to the precise mechanism shown, for the reason that various changes may be made therein without departing from the spirit of my invention.

In the drawings like characters of reference indicate corresponding parts in all the views.

Figure 1 is a fragmentary section through one form of my fuse tester, this form embodying a casing, a dry battery mounted therein, a buzzer and a lamp connected with the dry battery and adapted to be used independently, and a pair of adjustable contact fingers connected electrically with the buzzer and adapted to engage the ends of a fuse to be tested so as to complete a circuit through the buzzer; Fig. 2 is a fragmentary view, partly in section upon the line 2—2 of Fig. 1 looking in the direction of the arrow, of the mechanism shown in Fig. 1, this view showing the manner in which the buzzer is mounted and connected; Fig. 3 is a plan view of another form of the fuse tester, the lid or cover of the device being removed and the pivot pin of the contact fingers being shown in section, this view showing a different form of handle from that appearing in Fig. 2, and further showing a slight difference in the electrical connections, the lamp being omitted entirely; Fig. 4 is a fragmentary vertical section through the form shown in Fig. 3; and Fig. 5 is a central vertical cross section upon the line 5—5 of Fig. 3, looking in the direction of the arrow, and showing the shape of the handle and the manner in which the connecting wires are threaded through it.

A casing 6 is made of sheet metal and has a general cylindrical form. Mounted within this casing and forming a lining therefor is a cylindrical sleeve 7 of insulating material, preferably hard rubber. The casing 6 is also provided with a threaded end 8. Within the lining 7 is a battery case 9 made of sheet metal and containing a battery 10. The casing 6 is provided with a threaded end 11 and mating this threaded end is a threaded portion 12 of a screw cap 13, made also of metal. The battery 10 is provided with a filling 14, holding by saturation a battery fluid and constituting a paste, such as those employed in dry batteries. A spring 14<sup>a</sup> intervenes the battery case 9 and the screw cap 13.

At 15 is a carbon electrode provided with a cap 16 of conducting material. Pressing upon this cap is a contact spring 17 provided with a portion 18 secured to the casing 6 by aid of an insulated bolt 19. A presser knob 20 extends through an opening 21 and is mounted upon the portion 18 of the contact spring 17. Another contact spring 22 is secured rigidly in position and is adapted to be engaged by the portion 18 when the presser knob 20 is forced inwardly by pressure of the operator's thumb.

A screw cap is shown at 23 and serves to retain some of the separable parts in proper position. A reflector 24 (see Fig. 1) is made of polished metal and is provided with a lens 25. A so-called "incandescent bulb" 26, provided with the usual threaded sleeve 27, is mounted within a threaded socket 28, the latter being integral with a contact spring 29 which engages directly the casing 6. A contact button 30 is in electrical communication with a filament 31, as in other incandescent lamps. A disk 32 of insulating material is provided with an extended portion 33, the latter serving as a support for two contact fingers 34, 35. These contact fingers are movable in relation to a pivot pin 36 from which they are insulated by aid of a sleeve 36<sup>a</sup> of insulating material, preferably hard rubber.

Connecting wires are shown at 37, 38, the wire 38 leading to a buzzer magnet 39. A contact spring 40 engages the cap 16 of the electrode 15. A lug 41 of insulating material, integral with the disk 32, supports a plate 42 upon which the magnet and its accompanying parts are mounted. A vibratory arma-



ture 43 of the type generally employed in buzzers, is provided with a contact 44, the wire 37 being connected with this contact, as will be understood from Fig. 2. This wire 5 passes downwardly through a sleeve 45 of insulating material. A plate 46, insulated from the base 42, supports the stationary part 43<sup>a</sup> of the contact 44. From the magnet 39 a wire 49 leads to the casing 6, being soldered 10 directly thereto at the point 50. The circuit through the buzzer is completed by bringing the contact fingers 34, 35 into engagement with some conducting body and when this occurs, the buzzer produces its characteristic 15 sound. The circuit through the incandescent lamp, however, is independent of the buzzer circuit and is completed at will by the operator who merely presses the knob 20 for this purpose. Two circuits are thus energized in- 20 dependently from the same source of electricity.

The form shown in Figs. 1 and 2 is used as follows: The operator carries the instrument with him, and it being light and small may 25 readily be placed in the pocket or carried in the hand. The operator wishing to test a fuse, moves the contact fingers 34, 35 so as to bring their outer ends into engagement with the conducting ends of the fuse. The con- 30 tact fingers are mounted tightly enough to enable them to remain temporarily in the position in which they are set. An electrical connection being thus established between the contact fingers, the following circuit is 35 completed: battery cap 16, spring 40, plate 42, vibratory armature 43, contact 44, insulated plate 46, wire 37, contact finger 34, object (not shown) to be tested, contact finger 35, wire 38, magnet 39, wire 49, to bat- 40 tery case 9. If the operator needs a light, he simply presses the knob 20 inward, thereby completing the following circuit: battery cap 16, contact spring 17, portion 18 of said spring, contact spring 22, lamp contact but- 45 ton 30, lamp filament 31, lamp sleeve 27, lamp socket 28, spring 29, outer casing 6, contact spring 14<sup>a</sup> (see left of Fig. 1) to the battery case 9.

It will be noted that as the lamp circuit is 50 independent of the buzzer circuit, the operator can light the lamp in order to find the fuse to be tested, or if no light is necessary, can use the buzzer circuit without lighting the lamp.

55 In the form shown in Figs. 3, 4 and 5, a box 51 is provided with a handle plate 52 integral therewith, this handle plate having grooves 53 extending throughout its entire length. The handle plate is further provided with a 60 lug 54 through which extends a hole 55, and another lug 56 is provided with a hole 57, these holes being adapted to receive screws 58. Mounted within the box 51 is a plate 59 provided with an upturned portion 60. A 65 wire 61 is connected with an insulated bolt

61<sup>a</sup>, the latter being metallically connected to a buzzer magnet 62. This magnet is connected by a wire 63 with a plate 64 of conducting material, and engaging this plate is a contact finger 65. Another contact finger is 70 shown at 66, these fingers having a pivotal center represented by a bolt 67 encircled by a sleeve 68 of insulating material. A plate 69 of conducting material engages the contact finger 66, and is connected by a wire 70 75 with a contact 71. A vibratory armature is shown at 72 and is connected with an insulated bolt 73 to which a wire 74 is secured. A handle plate 75, (see Fig. 5) serves as a cover for the plate 52, these parts together 80 constituting the handle whereby the device is manipulated. The handle plate 75 is provided with an extended lid-like portion 76 which covers the box 51 for the purpose of protecting the contents thereof. 85

The form shown in Figs. 3, 4 and 5 is used as follows: The wires 61, 74 being connected with a battery or other source of electric supply, the contact fingers 65, 66 are brought 90 into engagement with the ends of the fuse to be tested. Electrical communication being established through the fuse, between the contact fingers 65, 66, a circuit is completed as follows: battery (not shown), wire 61, insulated bolt 61<sup>a</sup>, magnet 62, wire 63, con- 95 tact plate 64, contact finger 65, fuse (not shown), contact finger 66, contact plate 69, wire 70, contact 71, vibratory armature 72, bolt 73, wire 74, back to the source of electricity. The buzzer being thus energized 100 emits its characteristic sound and apprises the operator that the fuse is in good condition.

In connection with Figs. 1 and 2, it will be noted that the outer casing 6, being cylindrical in form and of comparatively small diameter, serves very readily as a handle, whereby the contact fingers 34, 35 may be 105 placed upon a fuse or the device as a whole manipulated otherwise. It will also be noted 110 that the box 51 serves not only as a case for holding the buzzer and certain parts associated with it, but that it constitutes a continuation of the handle 52.

Having thus described my invention, I 115 claim as new and desire to secure by Letters Patent:

1. The combination of a casing, a buzzer mounted therein, contact fingers connected 120 with said buzzer for the purpose of completing an electric circuit therethrough, a source of electricity mounted within said casing for energizing said buzzer, an electric lamp mounted within said casing, and means for 125 connecting said lamp with said source of electricity for the purpose of lighting said lamp.

2. The combination of a casing, an alarm member mounted therein, contact members 130 connected with said alarm member for the



purpose of completing a circuit therethrough, a battery mounted within said casing for energizing said alarm member, a lamp supported by said casing, and mechanism controllable at will for connecting said lamp with said source of electricity independently of the connection of said alarm member.

3. The combination of a supporting member, alarm mechanism mounted therein, means for connecting said supporting member with an article to be tested, a source of electricity for energizing said alarm mechanism, and an electric lamp connected with said source of electricity and energized independently of said alarm mechanism.

4. The combination of a casing of substantially cylindrical form, a disk of insulated material mounted therein and provided with an extension, a buzzer mounted within said casing, means connected with the buzzer for supplying an electric current thereto, and contact fingers for connection with a fuse or the like to be tested, the said contact fingers being journaled upon the extension of said disk.

5. The combination of a casing provided with a portion adapted to be used as a handle, the said casing having a reduced extension at one end, a buzzer mounted within said casing, means permanently carried by the casing for connecting said buzzer with a source of electricity, contact members both journaled upon a pivot pin carried by the said reduced extension of the casing, and connections between said contact members and the buzzer, whereby when the said contact members are placed in contact with a fuse or the like to be tested, the current of electricity will flow through the buzzer and energize the same.

6. The combination of a casing, battery mechanism mounted therein and adapted to supply an electric current, contact fingers supported by said casing and movable relatively to each other for the purpose of engaging the ends of a fuse or the like, and alarm mechanism mounted within said casing and connected with said battery and with said contact fingers.

7. The combination of a casing provided with a portion adapted to serve as a handle, and further provided with a compartment, electric alarm mechanism mounted within said compartment, contact fingers connected with said electric alarm mechanism and movable relatively to each other, a source of electricity for energizing said electric alarm mechanism, an electric lamp supported by said casing, and means controllable at will for completing a circuit from said source of electricity to said lamp.

8. A device of the character described,

comprising a casing of substantially cylindrical form provided with a threaded end, a battery mounted within said casing, a disk disposed adjacent to said threaded end, a threaded cap for securing said disk in position, an electric lamp mounted upon said disk, an alarm member disposed adjacent to said disk, contact fingers connected with said alarm member, a source of electricity mounted within said casing and connected permanently with said alarm member, and means controllable at will for completing the circuit from said source of electricity and said lamp.

9. The combination of a casing, electric alarm mechanism mounted in the casing, a pivot pin carried at one end of the casing, contact fingers mounted to move relative to said pivot pin, a sleeve of insulating material between the contact fingers and said pivot pin, plates engaged by the journaled ends of said contact fingers, the said plates being insulated from each other, electrical connections between said plates and the said alarm mechanism, and electrical connections for connecting said alarm mechanism with a source of electricity.

10. The combination of a casing provided with a portion serving as a handle and another portion having a compartment, an alarm mechanism mounted within said compartment, a journal pin carried at one end of the casing, and threaded at one end, two contact members both journaled on the said journal pin, and adapted to be turned thereon, a nut on the threaded end of the journal pin to tighten or loosen the parts, electrical connections between said contact members and the alarm mechanism, the said contact members being adapted to engage a fuse or like article to be tested, and connections leading from said alarm mechanism for connection with a source of electricity.

11. The combination of a casing provided with a portion adapted to serve as a handle, battery mechanism mounted within said casing and adapted to supply an electric current, contact fingers journaled on said casing and movable relative to each other for engaging the ends of a fuse or the like, an electric alarm mechanism mounted within said casing, connections between the contact fingers and said alarm mechanism, and means for permanently connecting the alarm mechanism with the battery mechanism.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERBERT GUY ADDIE.

Witnesses:

HUGH A. McINTOSH,  
WILL. H. FORRY.