

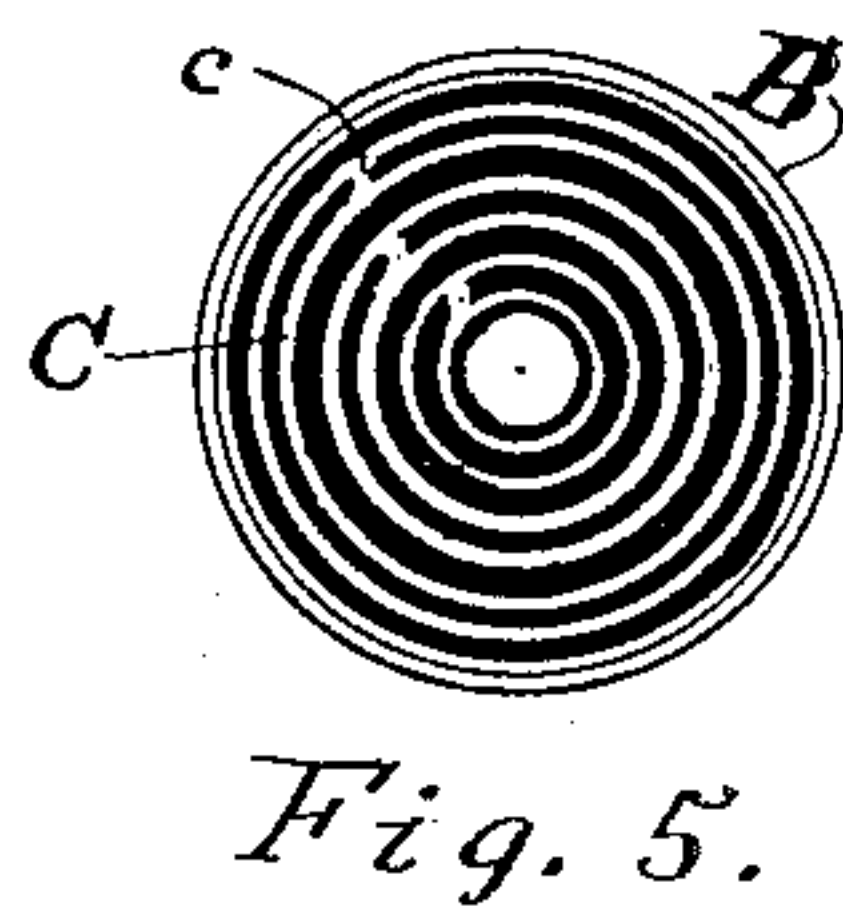
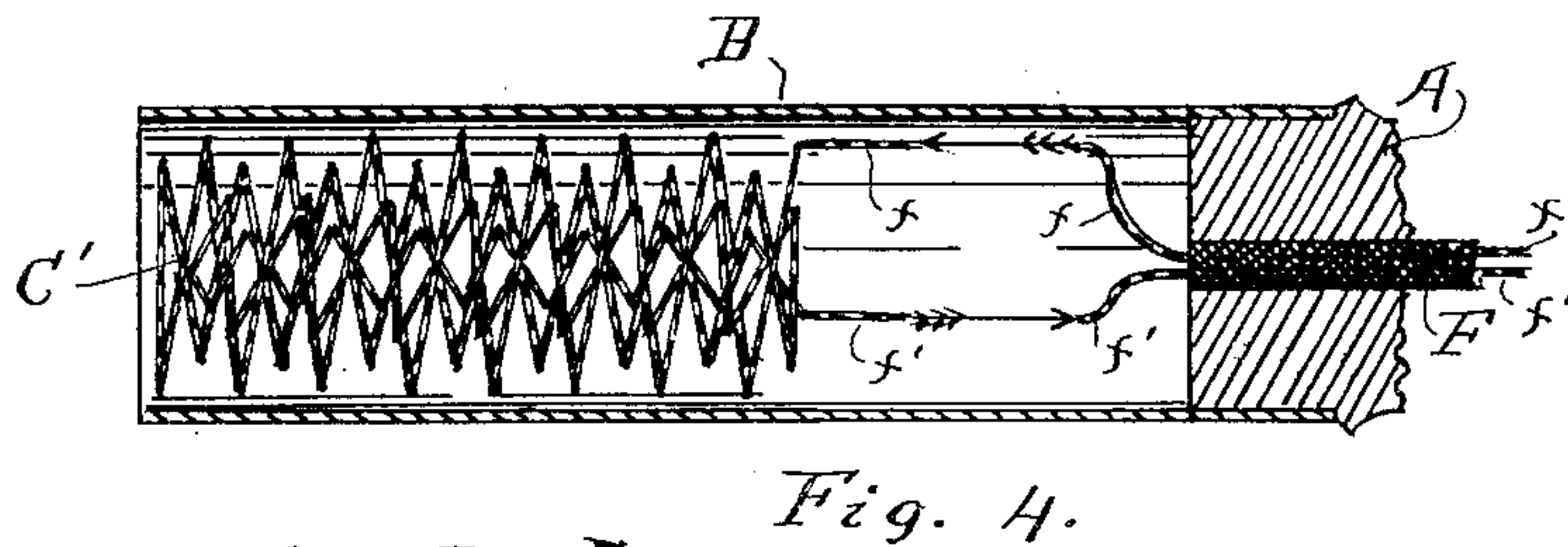
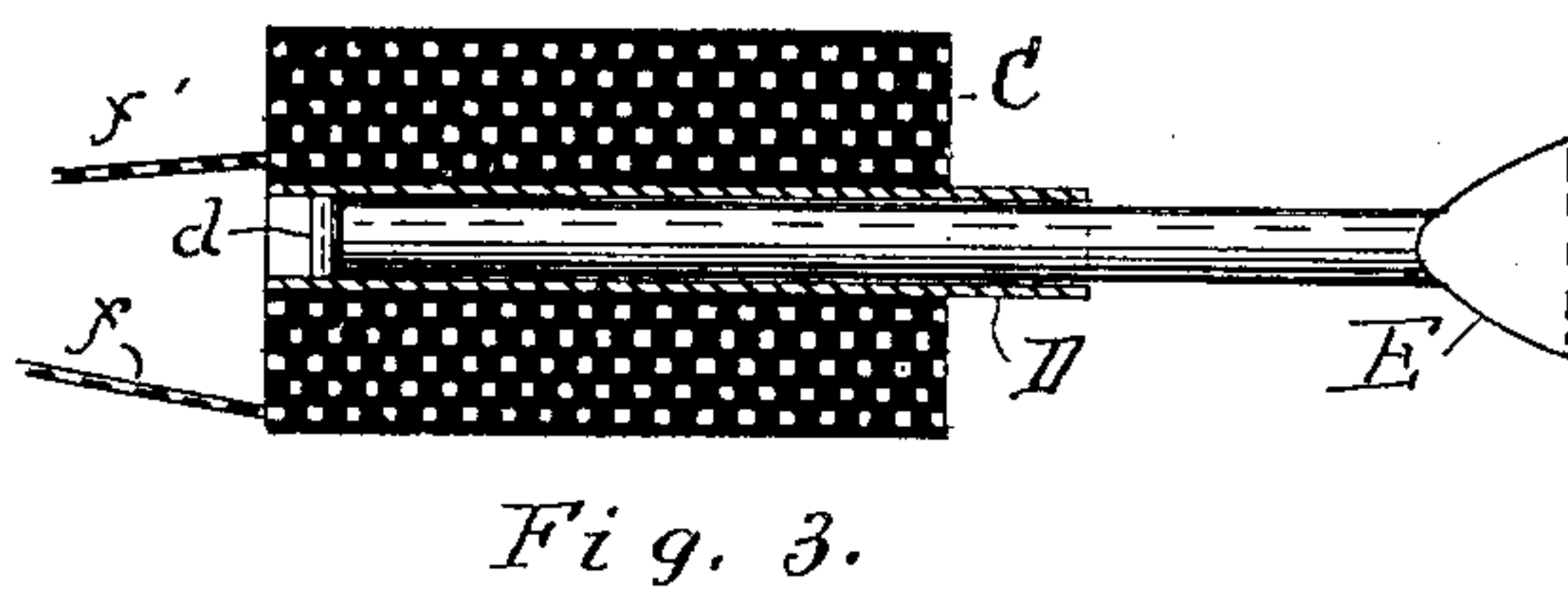
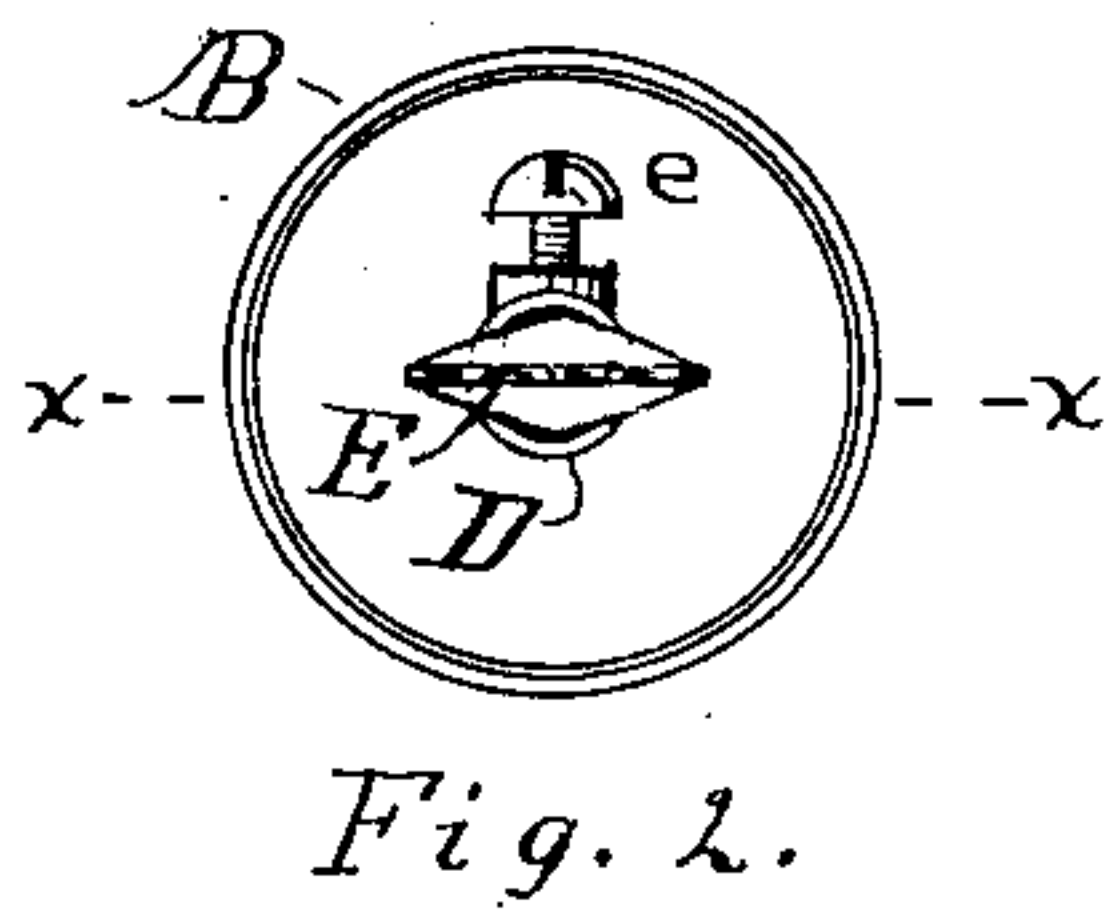
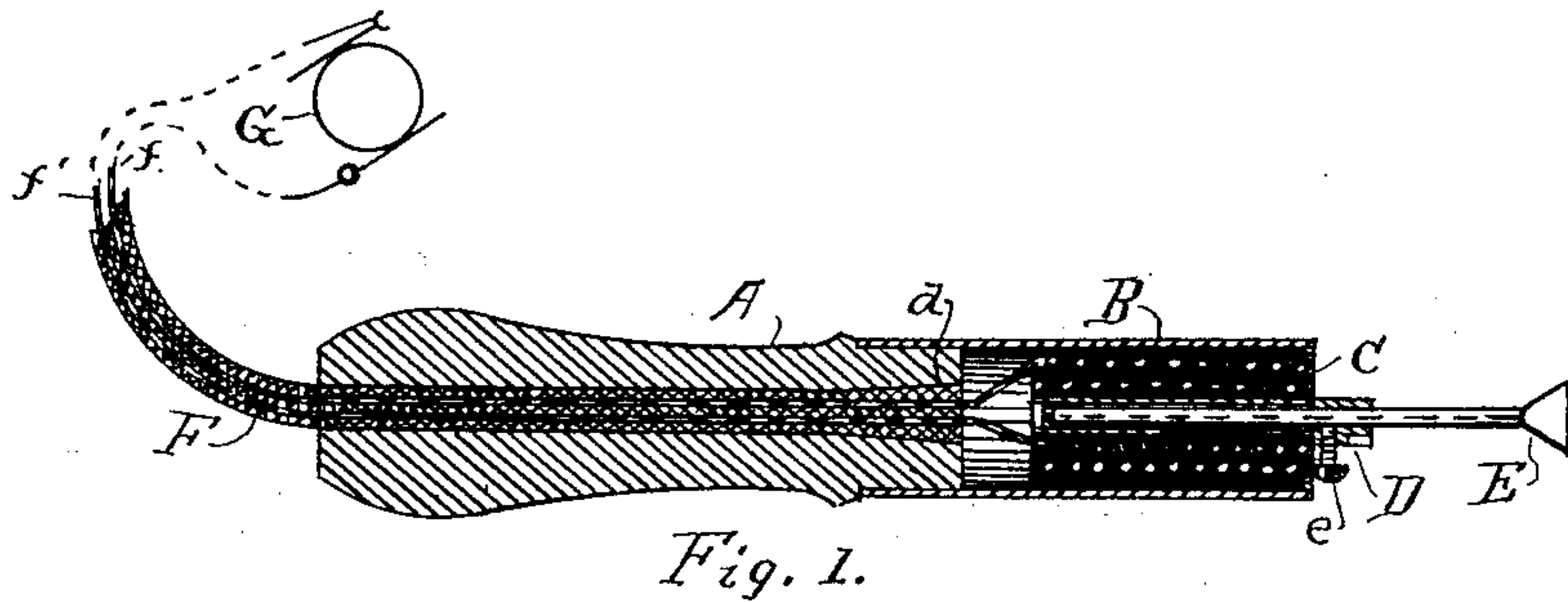
No. 747,891.

PATENTED DEC. 22, 1903.

L. W. NELSON.  
IMPLEMENT FOR FILLING WOOD SURFACES.

APPLICATION FILED APR. 9, 1903.

NO MODEL.



Witnesses

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# UNITED STATES PATENT OFFICE.

LEWIS W. NELSON, OF GRAND RAPIDS, MICHIGAN.

## IMPLEMENT FOR FILLING WOOD SURFACES.

SPECIFICATION forming part of Letters Patent No. 747,891, dated December 22, 1903.

Application filed April 9, 1903. Serial No. 151,911. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS W. NELSON, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Implements for Filling Wood Surfaces, of which the following is a specification.

My invention relates to improvements in implements for filling wood surfaces in the manufacture of furniture, &c.; and its objects are, first, to provide an implement with which a great degree of heat may be generated in small space and with a minimum amount of wire; second, to fully protect the wire from the oxidizing influence of the atmosphere; third, to unite perfect electrical insulation with an efficient heat-conducting substance in the heating-coil of the implement; fourth, to avert the necessity of using an open blaze or an intensely-heated metal for melting the wax in factories where the accumulated and circulating dust renders an open blaze or excessively-heated metal extremely dangerous; fifth, to provide an electric heater that cannot be tampered with and rendered inoperative by inexperienced operators; sixth, to provide an electric heater that may be readily adapted for use upon various implements, assoldering-irons &c.; seventh, to provide an electric heater that will render a uniform and constant heat at the point of contact. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of the implement on the line X X of Fig. 2. Fig. 2 is an end elevation. Fig. 3 is a sectional elevation of the heater upon the line X X of Fig. 2, showing the manner of winding and insulating the heater. Fig. 4 is a longitudinal section of the case or ferrule and a skeleton view of the electric winding, and Fig. 5 is an end view of the heating-coil.

Similar letters refer to similar part throughout the several views.

A represents the handle of the implement, which I construct of wood or other non-conductor of heat and electricity, and B represents a metal case or elongated ferrule or tube for the reception of the heating-coil C.

This case sits well back upon and is secured to the handle A.

F represents an electric insulating-cable covering the conductor-wires  $f$  and  $f'$ , which represent the positive and negative wires completing a circuit from a source of electric energy, as a battery, a dynamo, &c., by connecting with the corresponding wires  $f$  and  $f'$  within the case B, and for the purpose of averting the danger of breaking the connection between the wires in the insulating-cable F and those within the coil C, I make the aperture through the handle and the insulating-cable at  $a$  somewhat larger than the balance of the aperture, so that the insulating-cable cannot be easily drawn back out of the handle.

In the construction of the heating-coil I make a central core D of metal tubing of a proper size to receive and support the heating-iron E, which I secure therein by means of a set-screw  $c$  or other suitable device, and I pass a pin  $d$  through this core and into the coil for the double purpose, first, of averting the danger of the coil turning upon the core, and, second, of forming a stop to hold the heating-iron E to place. In winding the coil I place, first, a layer of sheet-asbestos or other non-conductor of electricity, which I wind to place with small non-insulated copper or other suitable wire with the several coils far enough apart so that there is no possibility of their coming in contact one with the other. I then cover the tier of coils with sodium silicate and this with a second layer of asbestos, when I carry the wire past the layer of asbestos, as indicated at  $c$  in Fig. 5, and wind back over the asbestos layer to the opposite end of the coil, which process is continued until the desired number of layers are wound in the coil to produce the desired degree of heat at the end of the metal-heater F. The manner of winding the wires in the coil C would be, perhaps, better understood from reference to Fig. 4, where the wire of the coil is shown with the distances of the coil apart greatly exaggerated to facilitate following the current of electricity entering, passing through, and leaving the coil, as indicated by the arrows.

In Figs. 1, 3, and 5 the dark surfaces in



the coil indicate the insulating substance, and the light lines and spots indicate the wiring.

I find that by the use of sodium silicate I have at once an excellent insulator of electricity and a ready conductor of heat, and as the sodium silicate before hardening saturates the asbestos or other insulating substance and when hardened renders that a reasonably good conductor of heat I find that the best possible results are attained by the use of these materials in the manner and for the purposes hereinbefore stated, the most advantageous feature of the sodium silicate being its property of hardening and becoming practically a glass-insulating element completely surrounding and enveloping the electric wires as soon as the electric current is passed through the coils.

G represents the electric generator, by means of which the coil C is energized, as hereinbefore indicated.

I do not desire to restrict myself to the use of sodium silicate as the soluble filling in my coil, as many of the soluble silicates may be successfully used for the purpose, but men-

tion this especially, as its hardening, heat-conducting, and electric insulating qualities are well known by those versed in the art; nor is the use of asbestos actually necessary as an insulator, as other insulating materials may be rendered to a degree fireproof and used with safety and efficiency.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

In an implement for filling wood a central tubular core wound alternately with asbestos sheets and coils of wire, a soluble heat-conducting electric insulator filling the interstices of the asbestos and between the wires, and a heating-iron detachably secured at one end in the tubular core, substantially as and for the purpose set forth.

Signed at Grand Rapids, Michigan, April, 1903.

LEWIS W. NELSON.

In presence of—

I. J. CILLEY,  
A. S. PALMY.