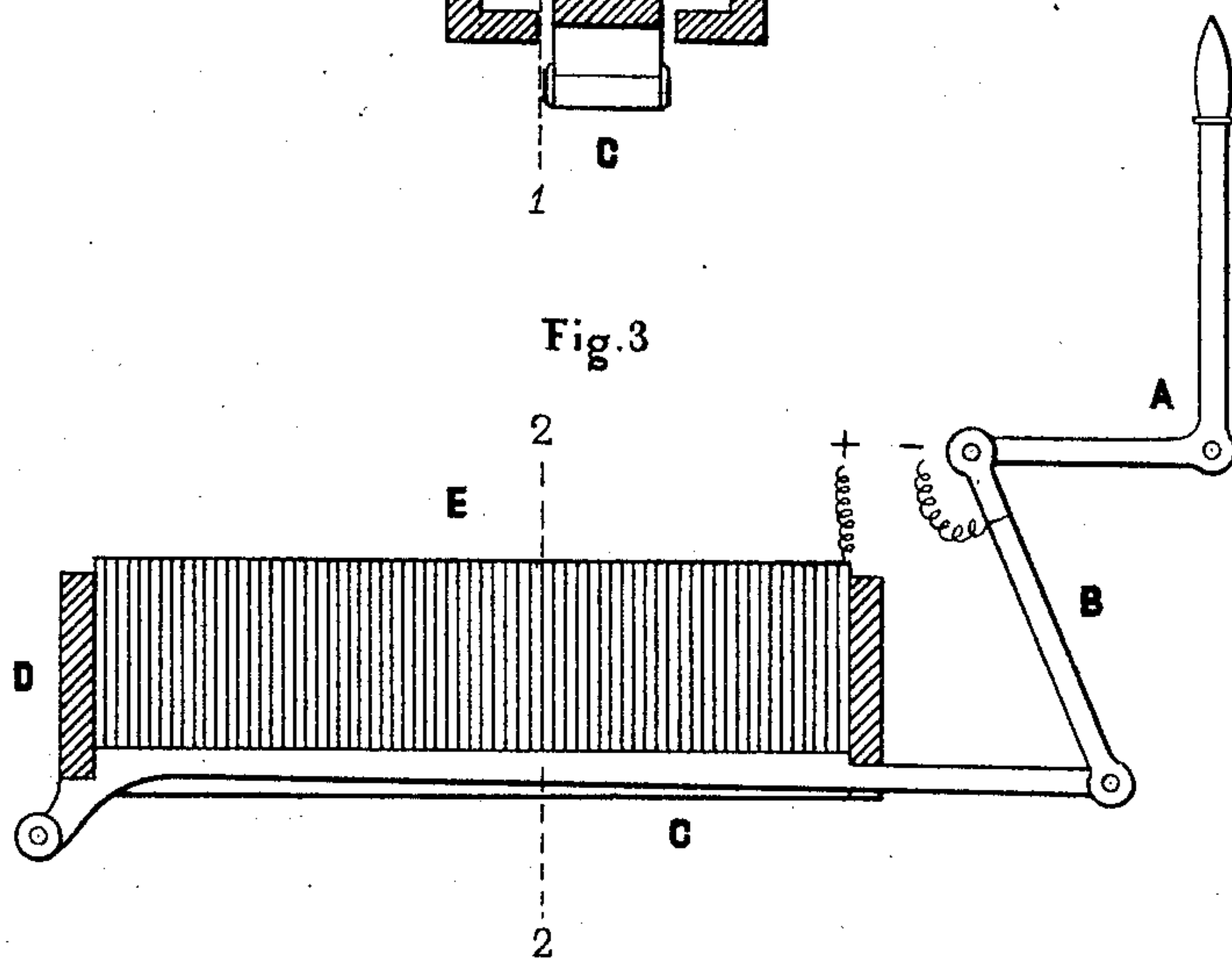
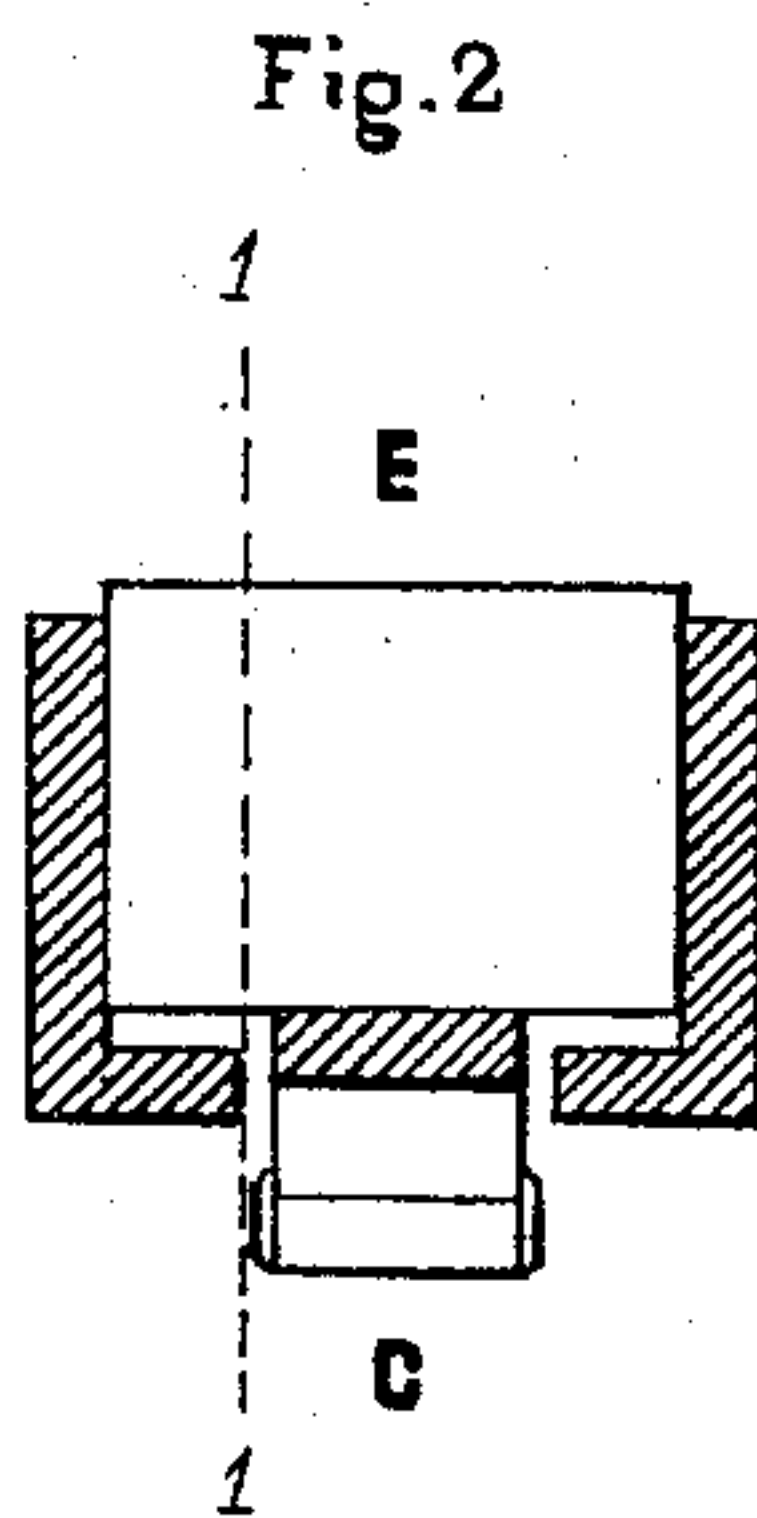
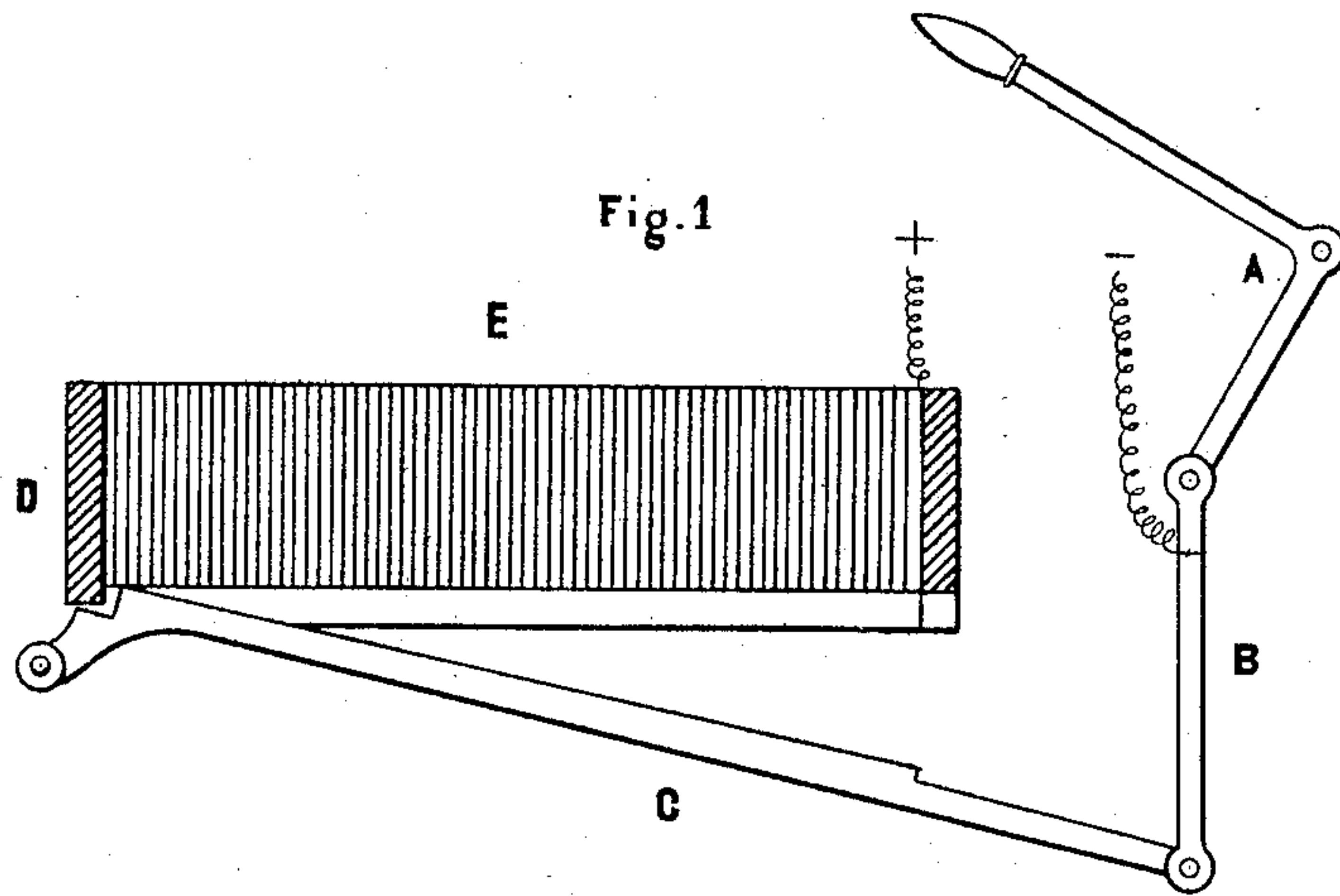


(No Model.)

W. H. KNIGHT.  
ELECTRICAL RESISTANCE.

No. 368,596.

Patented Aug. 23, 1887.



WITNESSES

Francis D. Blackwell  
F. H. Knight

INVENTOR

Walter H. Knight  
by Bradley Knight  
Atty.

# UNITED STATES PATENT OFFICE.

WALTER H. KNIGHT, OF NEW YORK, N. Y.

## ELECTRICAL RESISTANCE.

SPECIFICATION forming part of Letters Patent No. 368,596, dated August 23, 1887.

Original application filed March 13, 1886, Serial No. 195,133. Divided and this application filed January 28, 1887. Serial No. 225,824.  
(No model.)

*To all whom it may concern:*

Be it known that I, WALTER H. KNIGHT, a citizen of the United States, and a resident of the city, county, and State of New York, have  
5 invented certain new and useful Improvements in Electrical Resistances, of which the following is a specification, this application being a division of one filed by me March 13, 1886, and numbered 195,133.

10 My invention consists of a series of metallic plates, preferably of iron or steel, that are placed face to face, so as to rest in contact and give a superficial resistance to the passage of an electric current through the mass. I also  
15 provide a movable contact device adapted to connect with the plates at any point in the series, so as to make the resistance variable at will.

In the accompanying drawings, Figure 1 is  
20 a section of a variable-resistance box on line 1 1 of Fig. 2. Fig. 2 is a section on line 2 2 of Fig. 3; and Fig. 3 is the same view as Fig. 1, with the resistance-plates all short-circuited.

In the figures, E represents a series of thin  
25 iron plates, rectangular in shape, and of a size adapted to the quantity of the current passing through. These plates are set on edge in close superficial contact and surrounded by a box, D, of non-conducting non-combustible material, such as soapstone. The sides of the box,  
30 as seen in Fig. 2, have narrow pieces on their lower edges, upon which the plates normally rest. A metallic jackknife-lever, C, is hinged

to the bottom of the box at one end, and is connected at its free end to a lever, A, through  
35 connecting-rod B. As this lever is raised by lever A from the position shown in Fig. 1 to that shown in Figs. 2 and 3 it comes in contact with the lower edges of the plates E in succession and lifts them slightly from their  
40 normal bearing, so that they rest upon it and make electrical connection with it.

The lever C is connected to one terminal and the end plate of the series to the other  
45 terminal of the circuit, so that as the lever passes from one extreme position to the other the plates are gradually brought into or out of the circuit and the resistance varied thereby. This resistance is very compact. It cannot be injured by heat, and is easily and rapidly  
50 varied to any extent without sparking at the contact-points.

I claim—

1. A variable electrical resistance formed of a series of metallic plates in superficial con-  
55 tact, and a contact device adapted to sweep over the edges of the plates to bring any desired number of them into circuit.

2. In a variable electrical resistance, the combination of the metallic plates E and the  
60 manually-operated contact C, making connection with the edges of the plates.

WALTER H. KNIGHT.

Witnesses:

JOHN J. REID,  
OSCAR LAPHAM.