

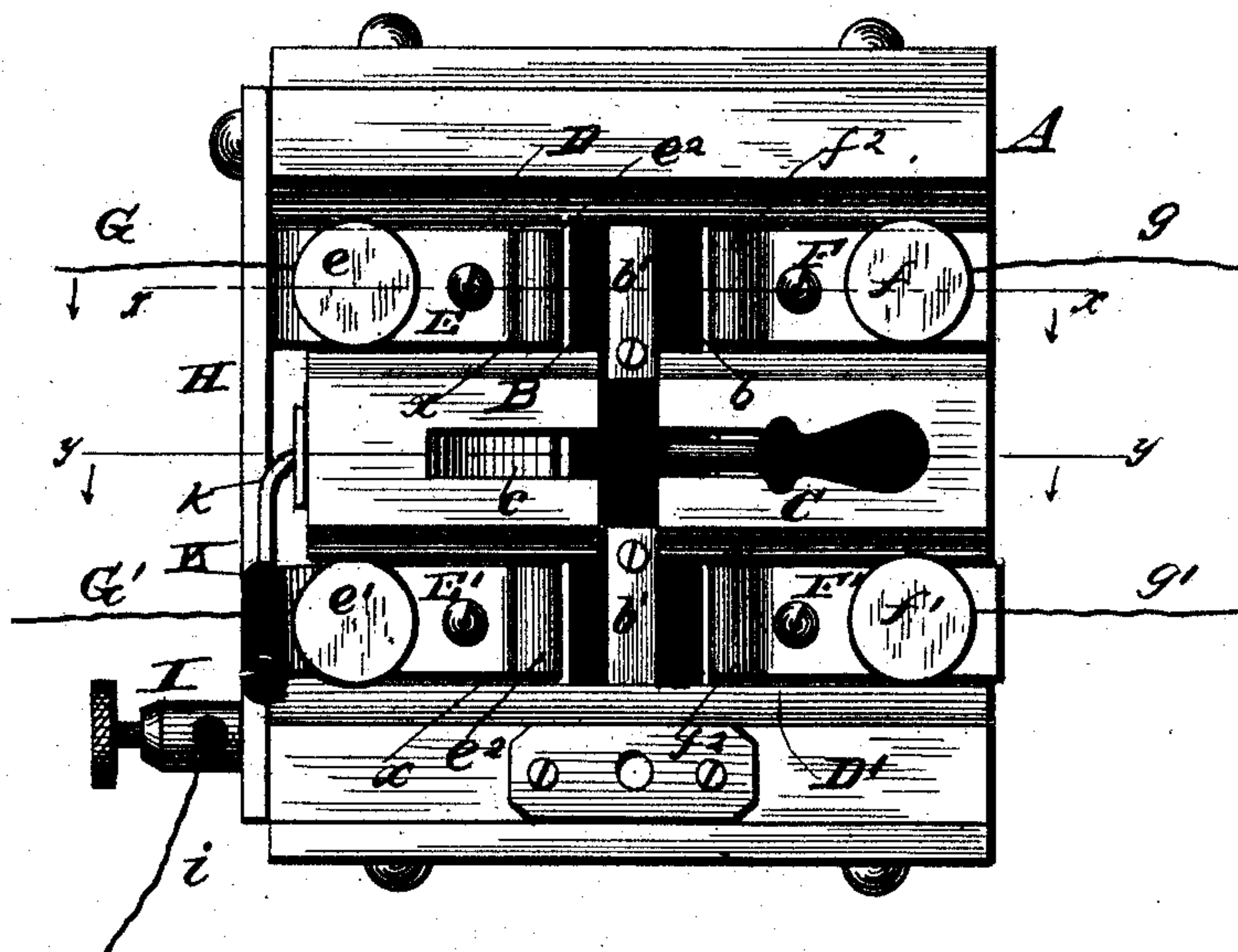
(No Model.)

J. FUCHS.  
ELECTRIC CUT-OUT.

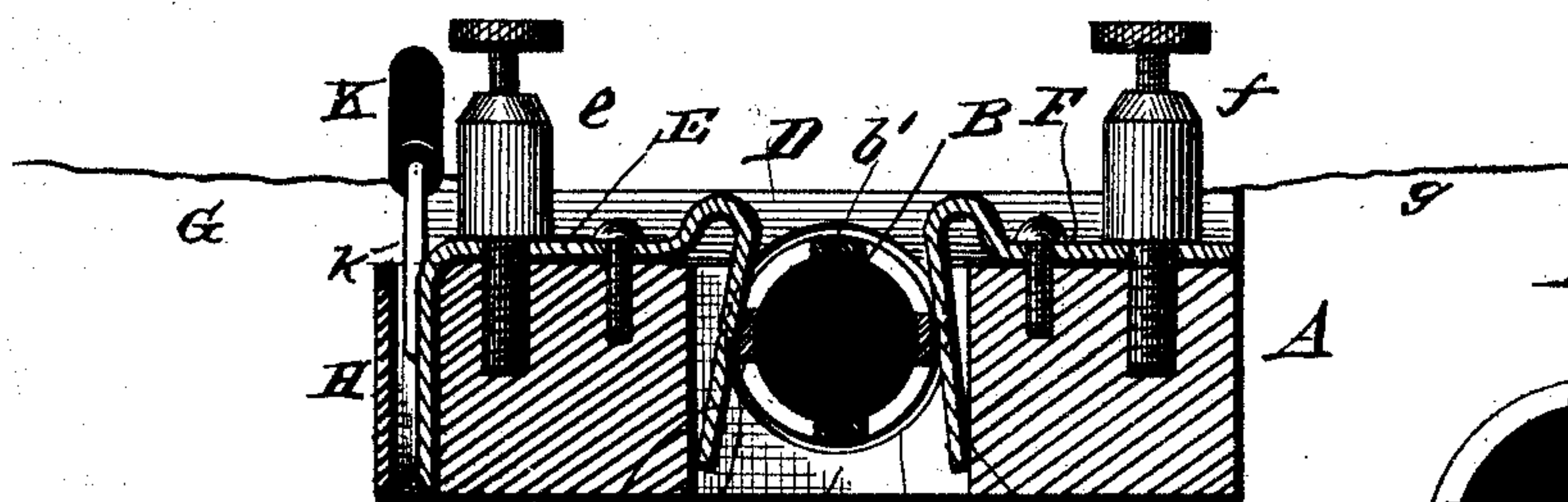
No. 356,632.

Patented Jan. 25, 1887.

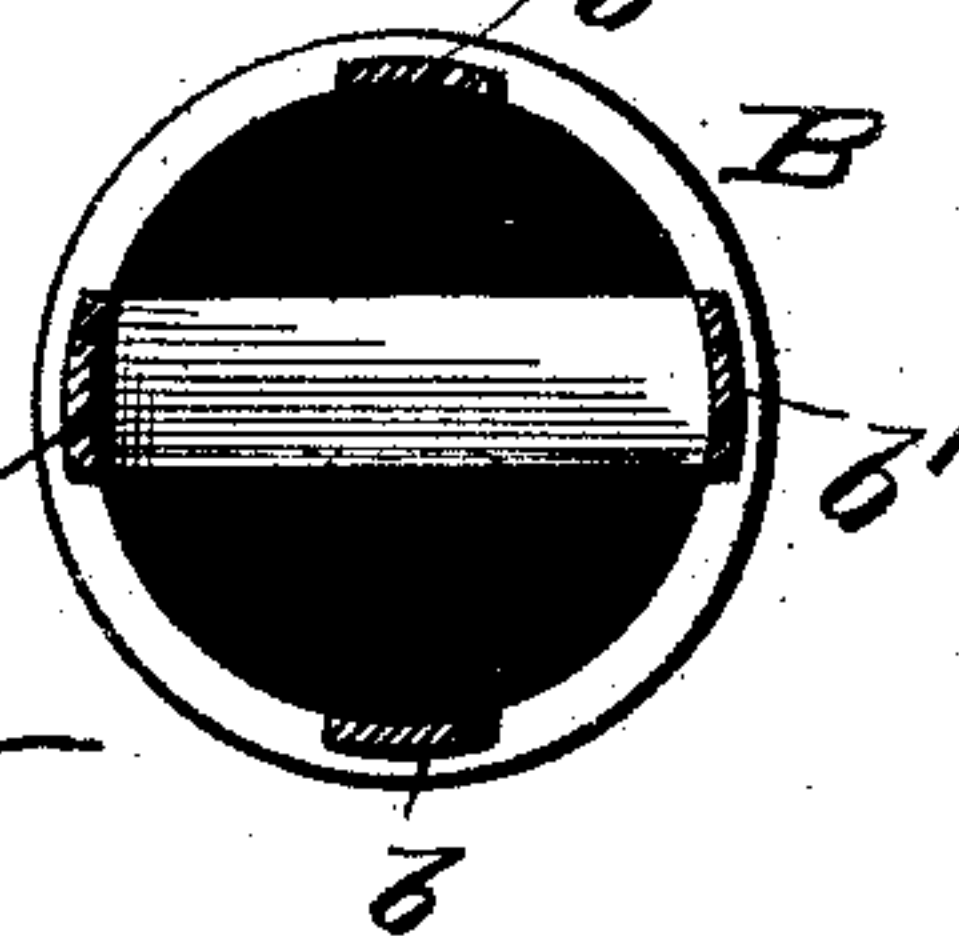
*Fig. 1.*



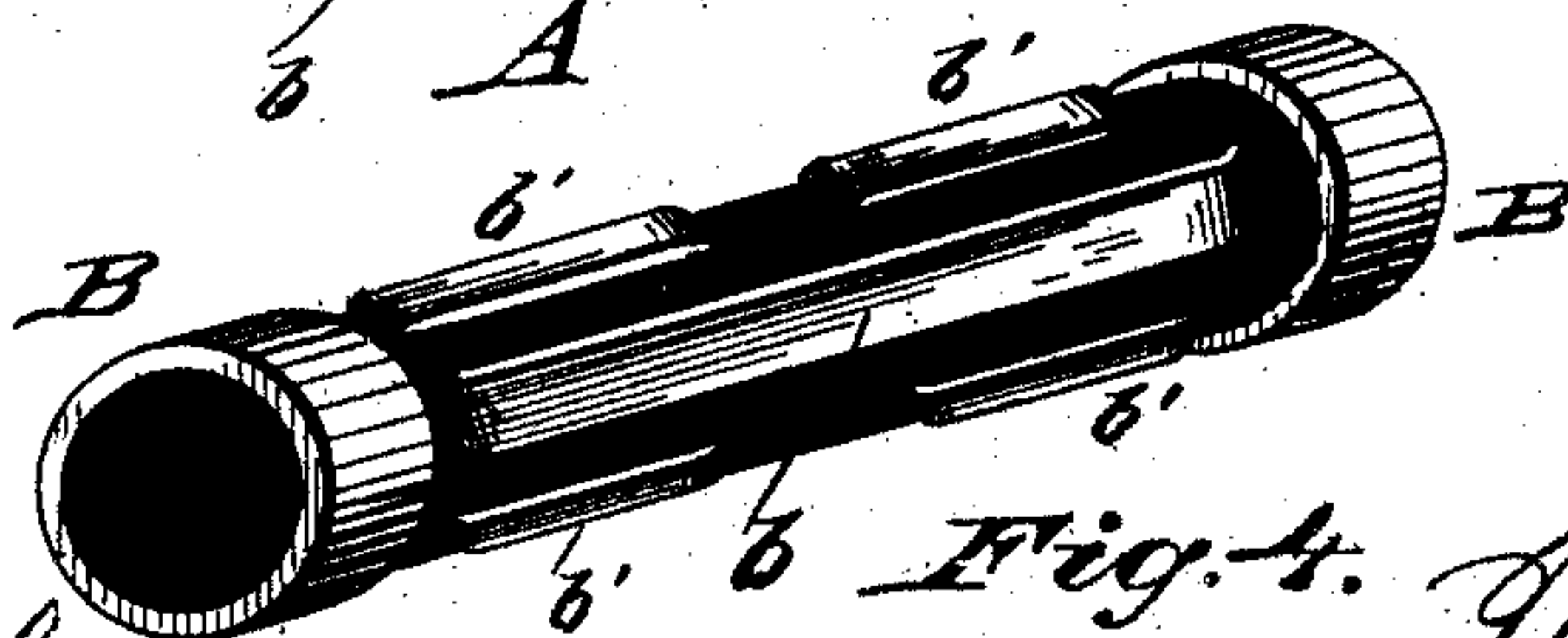
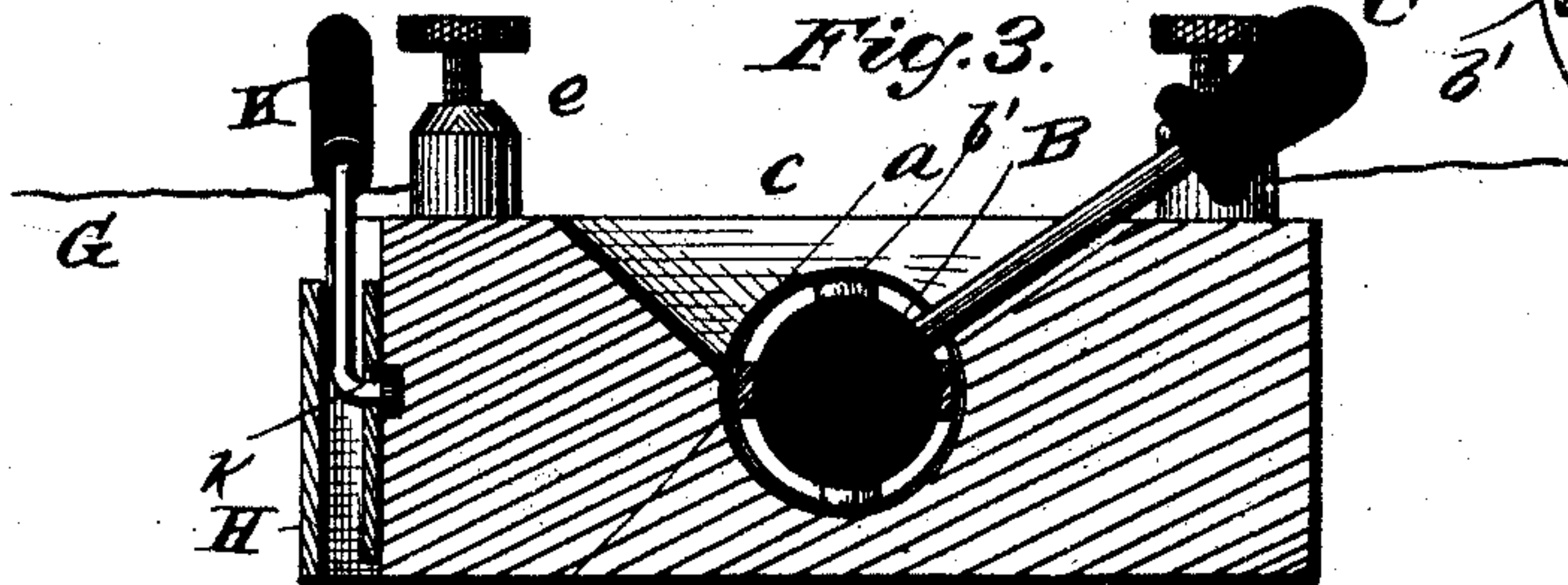
*Fig. 2.*



*Fig. 5.*



*Fig. 3.*



*Fig. 4.*

WITNESSES

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# UNITED STATES PATENT OFFICE.

JOHN FUCHS, OF BEARDSTOWN, ILLINOIS.

## ELECTRIC CUT-OUT.

SPECIFICATION forming part of Letters Patent No. 356,632, dated January 25, 1887.

Application filed August 3, 1886. Serial No. 209,894. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN FUCHS, of Beardstown, in the county of Cass and State of Illinois, have invented certain new and useful Improvements in Electric Cut-Outs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a plan view of my improved electric cut-out. Fig. 2 is transverse section on line *x x*, Fig. 1. Fig. 3 is a similar view on line *y y*, Fig. 1. Fig. 4 is a perspective view of the insulating-cylinder. Fig. 5 is a cross-section of the same.

This invention relates to improvements in cut-out devices for telegraphic instruments; and it consists in the construction and novel arrangement of parts, hereinafter described, illustrated in the drawings, and pointed out in the claims hereto appended.

Referring to the accompanying drawings, A designates the rectangular bed-block of the device provided with the large transverse central opening, *a*, in the ends of which are journaled the ends of the oscillating cylinder B, of rubber or other suitable non-conducting material.

*b b* are metallic strips secured longitudinally to the periphery of said cylinder. The said strips are diametrically opposite each other and extend nearly the entire length of the cylinder B. The strips *b b* are not connected through the cylinder B. One of the said strips electrically connects the plates E E', and the other connects the plates F F'. If desired, the one connecting the plates E E' can be used alone; but it is preferable to electrically connect the plates F F' also.

*b' b'* are metallic strips secured longitudinally to the periphery of the cylinder midway between the strips *b b*. Each strip *b'* runs diametrically through the cylinder B, near one end thereof, and has its ends running inward on the same, on opposite sides, for about one-third of the length of the cylinder, so that the two strips are not continuous with each other, but have spaces between their adjacent ends. There are but two strips, *b'*, each of which runs

through the cylinder B, and has its ends bent down on the same.

C is a lever-handle rising from the cylinder B, and standing and moving in a central longitudinal slot, *c*, in the bed-block A, which slot communicates with the opening *a*.

D D' are two similar longitudinal shallow grooves in the upper surface of the bed-block, equally distant on each side of the slot *c* and parallel therewith.

E E' are spring contact-plates secured in the front portions of the grooves D D', respectively, on the portions of said grooves in front of the opening *a*. Each of the said contact-plates is connected, near its front end, with a binding-post, *e e'*, respectively, and its rear end *e<sup>2</sup>* is bent vertically downward and enters and passes through the opening *a* in front of the cylinder B, the said opening having suitable orifices, *x x*, in both the upper and lower surfaces of the bed-block therefor. The front ends of the contact-plates lie against the front edge of the bed-block, as shown.

F F' are contact-plates, similar to the plates E E', but secured in the portions of the grooves D D' in rear of cylinder B. The plates F F' have the binding-posts *f f'* connected to them near their rear ends, and their front ends, *f<sup>2</sup>*, are bent vertically downward to pass through the opening *a* in rear of cylinder B. The downward-bent portion of the plates E E' and F F' form springs, which press against the periphery of the cylinder B. To increase the power of the springs, the plates are first bent upward before being bent downward, so as to form transverse beads or ridges on their upper surfaces.

G G' are the main-line wires, respectively connecting with the binding-posts *e e'*, and *g g'* are the lines of wire from the binding-posts *f f'* to the telegraphic instrument at the station.

H is a metallic plate secured to the front edge of the bed-block in such manner as to come in contact with the front end of the contact-plate E, but not with that of the plate E'; and I is a binding-post secured to plate H opposite plate E' and connecting said plate H by a ground-wire, *i*, running from said post, with the earth.



K is a lever-handle pivoted centrally on the front edge of the bed-block between said edge and the plate H. Said lever-handle has a metallic shaft, *k*, which, when turned toward the binding-post *e'*, electrically connects the front end of the contact-plate *E'* and the plate H, the current flowing through the wire *G*, the plate *E*, to which the binding-post *e* is connected, and the plate H, to the binding-post *I* and the ground-wire *i*. The stem *k* makes electric contact between the plates *E'* and *H* and aids in cutting the plates *E E'* out of circuit.

It is evident that when the lever-handle *C* is so turned that the strips *b'* are in contact with the spring portions of the contact-plates *E E'* on one side of the cylinder *B*, and with the similar portions of the contact-plate *F F'* on the opposite side of said cylinder, the said plates are electrically connected, and the telegraphic instrument connected with the device is in circuit; but when the cylinder *B* is so turned as to bring one of the strips *b* in contact with the plates *E E'*, and the other strip with the plates *F F'*, the electrical connection between the front and rear contact-plates is broken, and the telegraphic instrument is cut out of the circuit, the current flowing from the contact-plate *E'* to the contact-plate *E* through the strip *b*.

One great advantage of the device is that the circuit is never broken, as in most other cut-outs; but contact is formed between the plates *E E'* and the strip *b* before the said plates have broken contact with the strips *b'*, so that the current is merely diverted and not broken. This result is owing to the length of the spring portion of the contact-plates and the width of the strips *b b'* and their arrangement on the oscillating cylinder. The ground-wire *i* is to protect the instrument from the lightning, as, when the lever-handle *K* makes contact with the plate *E'* the current produced by lightning will pass through the plate *H* to the ground and not enter the instrument.

Besides its described use as a cut-out, the device could evidently be used as an electric switch.

In case there are more than one or two batteries used, there must be a cut-out mechanism for each; but as the latter are similar, they are reduplications and need not be illustrated,

the insulating-cylinder being extended sufficiently to hold the additional plates.

Having described my invention I claim—

1. The combination, with the bed-block, of the non-conducting cylinder oscillating in an opening therein, and provided with the longitudinal strips *b b'*, the former of which extend nearly the entire length of the cylinder, and the latter of which pass through the cylinder near its ends and extend only a short distance on the periphery thereof, on opposite sides, between the strips *b*, the front spring contact-plates connected with binding-posts for the line-wires, and the similar rear spring contact-plates connected with binding-posts for the wires to a telegraphic instrument, substantially as specified.

2. The combination, with the rear spring contact-plates having electric connection with a telegraphic instrument, the oscillating non-conducting cylinder provided with the contact-strips, substantially as described, and the front spring contact-plates, *E E'*, having electric connection with the main or line circuit, of the metallic plate *H*, attached to the front of the bed-block and in contact with one of the front contact-plates, the binding-post connected with the plate *H*, the ground-wire running from said binding-post, and the lever-handle to make electric connection between the other front contact-plate and the plate *H*, substantially as specified.

3. The combination of the bed-block having slot *c* and opening *a*, the non-conducting oscillating cylinder *B*, the contact-strips *b b'*, secured to said cylinder and provided with the lever-handle *C*, moving in the slot *c*, and the spring contact-plates *E E'* and *F F'*, respectively, provided with the binding-posts *e e'* and *f f'*, and having their free spring ends *e<sup>2</sup>* and *f<sup>2</sup>* passing through the opening *a* in the bed-block in such positions that they will make contact with the strips *b* before they break contact with the strips *b'*, substantially as specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOHN FUCHS.

Witnesses:

J. O'CONNELL,

A. W. STUHRNAM.