

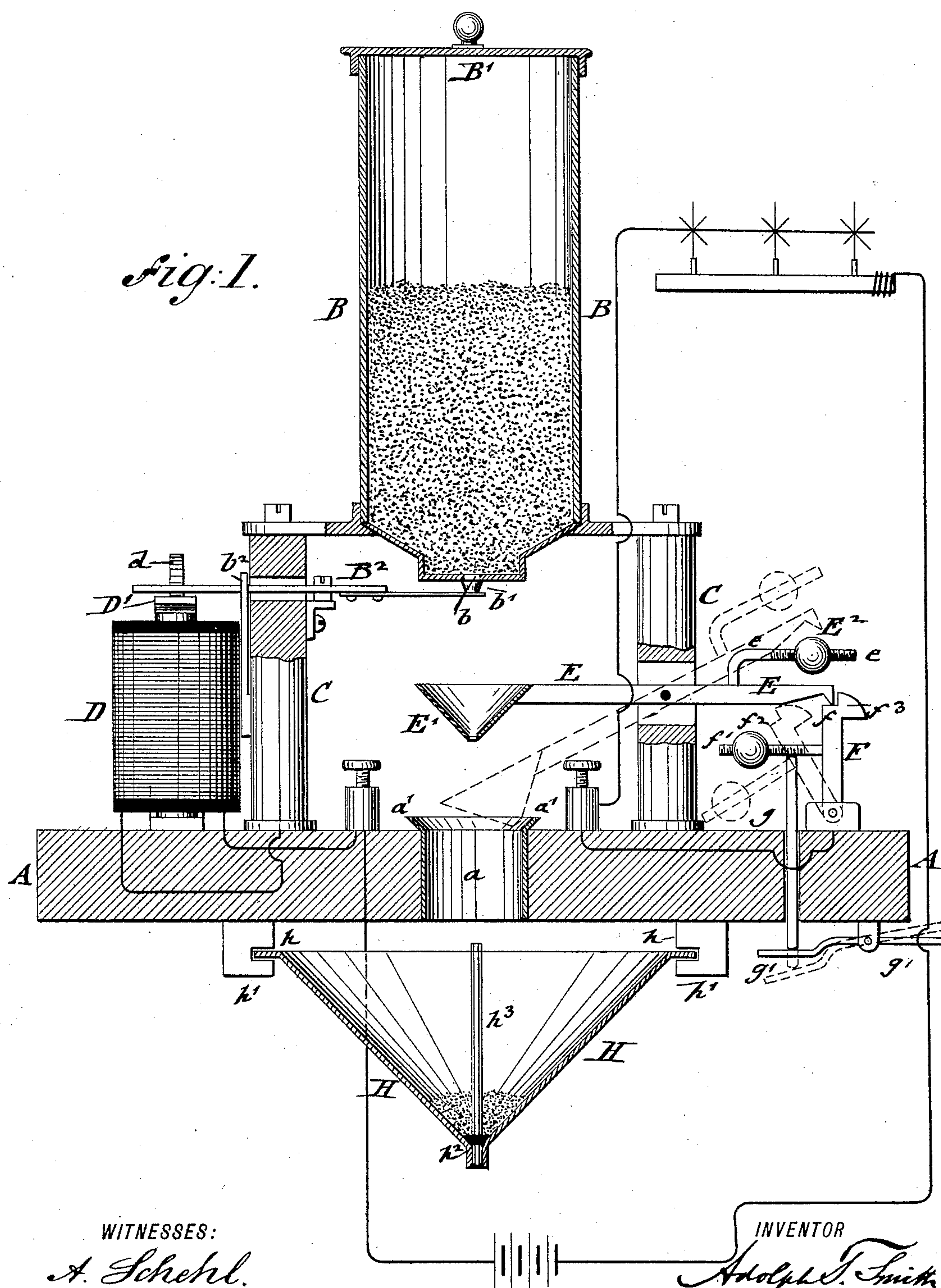
(No Model.)

2 Sheets—Sheet 1.

A. T. SMITH.
ELECTRIC CUT-OUT.

No. 407,455.

Patented July 23, 1889.



WITNESSES:

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Carl Karp

INVENTOR

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BY *Ernest Raegner*
ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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Fig: 2.

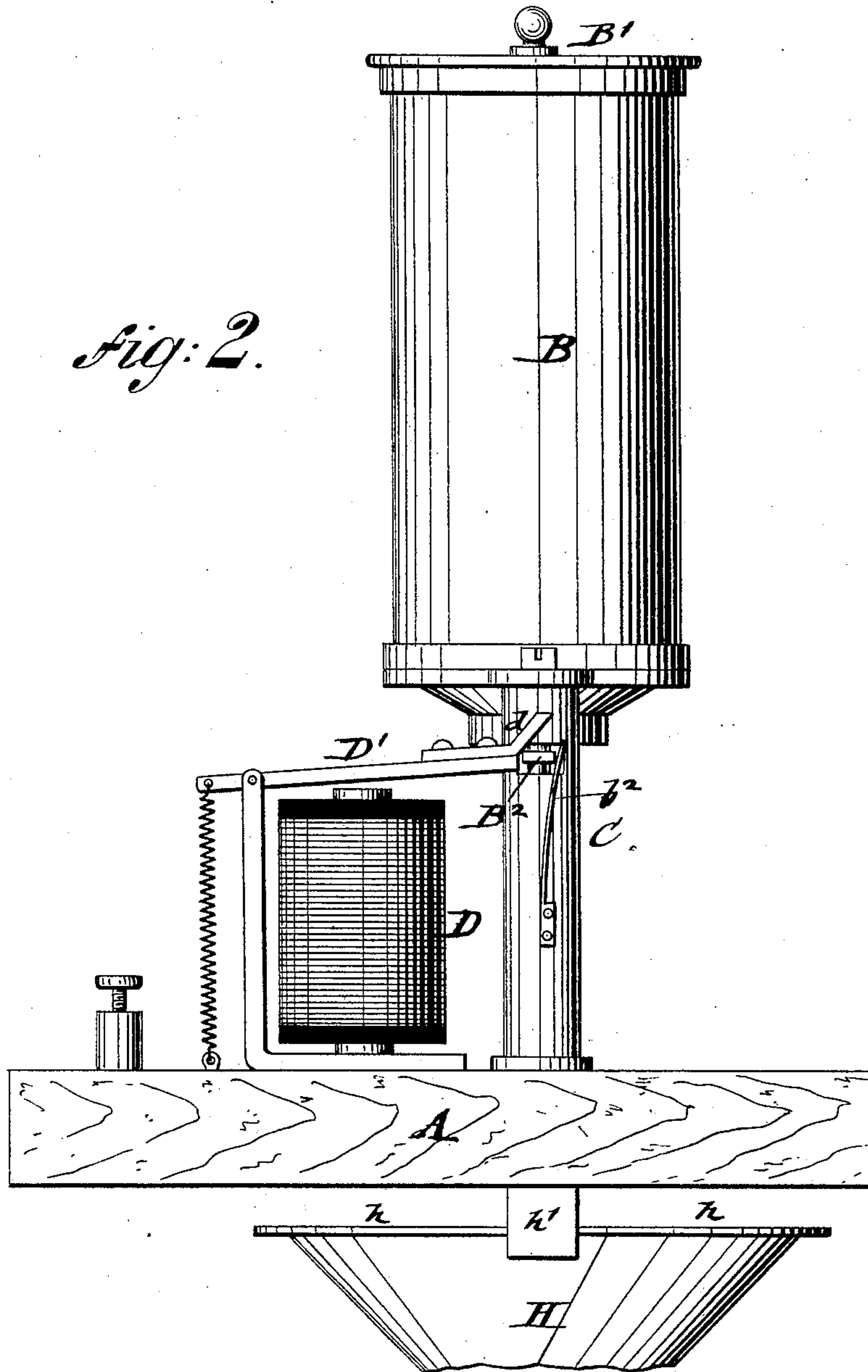
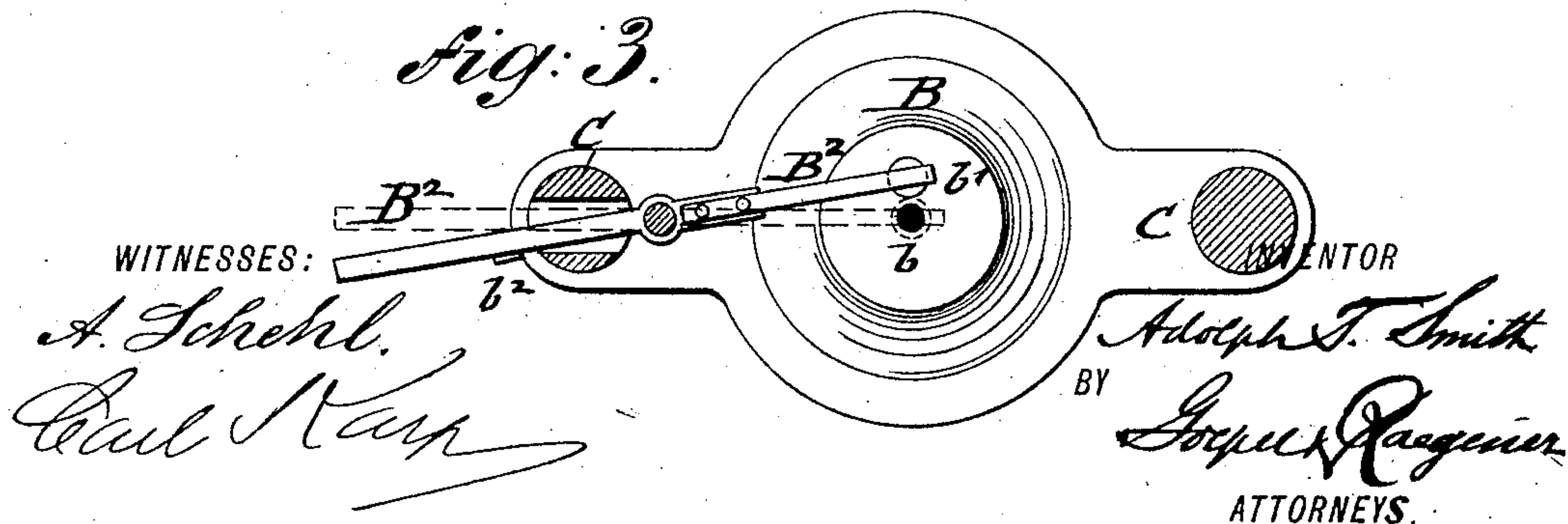


Fig: 3.



UNITED STATES PATENT OFFICE.

ADOLPH T. SMITH, OF NEW YORK, N. Y.

ELECTRIC CUT-OUT.

SPECIFICATION forming part of Letters Patent No. 407,455, dated July 23, 1889.

Application filed January 30, 1889. Serial No. 298,122. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH T. SMITH, of the city of New York, in the county and State of New York, a citizen of the United States, have invented certain new and useful Improvements in Electric Cut-Offs, of which the following is a specification.

This invention relates to an improved electric cut-off that is intended for use in electric circuits, so as to cut out the battery and prevent the running down of the same in case short-circuiting should take place at any time; and the invention consists of an electric cut-off which comprises a receptacle for sand or other suitable material, a valve for closing the bottom opening of the same, an electro-magnet in the gas-lighting or other circuit, the armature of which operates said valve, so as to open or close the bottom opening of the receptacle, a fulcrumed contact-lever having a funnel at one end and a weight at the opposite end, a pivoted and weighted contact-lever provided with a stop-shoulder for the fulcrumed contact-lever, means for setting said levers in contact with each other, and a receiving-funnel located vertically below the funnel of the fulcrumed contact-lever, so as to collect the sand discharged and return it from time to time to the main receptacle.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section of my improved electric cut-off, showing its connection with a gas-lighting circuit. Fig. 2 is a side elevation of the same, and Fig. 3 a detail bottom view of the valve and valve-lever of the sand-receptacle.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a supporting-bracket, of wood or other suitable insulating material, and B a receptacle which is supported on the bracket or platform A by suitable standards C C, said receptacle being preferably made of glass or other suitable material, so as to readily observe the quantity of sand or other suitable material in the same. The receptacle B is closed by a lid B' and provided in its bottom with an opening b, which is closed by a valve b', that is arranged at the outer end of a fulcrumed le-

ver B², the opposite end of which is acted upon by a curved or inclined arm d, attached to the armature D' of an electro-magnet D, which latter is located in the gas-lighting or other circuit. The outer end of the fulcrumed lever B² is also acted upon by a spring b³, which returns the valve b' into normal position, so as to close the opening b of the receptacle B as soon as the armature D' is released from the electro-magnet D. Whenever the armature of the electro-magnet D is attracted, the inclined arm d of the same actuates the fulcrumed valve-lever B² and moves the valve b' to one side of the bottom opening b of the receptacle B, so as to permit the discharge of the sand or other material in the receptacle through the bottom opening of the same. Vertically below the opening of the receptacle B is arranged a funnel E', which is attached to the inner end of a fulcrumed contact-lever E, the opposite end of which is provided with a curved and screw-threaded arm e, to which an adjustable balance-weight E² is applied.

The outer end of the contact-lever E is made pointed, and forms contact with a stop-shoulder f of a contact-piece F, which is pivoted at its lower end to the bracket A, and also provided with a threaded arm f', extending at right angles thereto, and carrying an adjustable weight f², so that as soon as the contact-piece F is released by the tilting of the contact-lever E the contact-piece F is dropped by the action of its weight, as shown in dotted lines in Fig. 1. At the upper end of the contact-piece F, back of the stop-shoulder f, is arranged a segment f³, along which the contact-point of the valve-lever E moves when the tilting action of the contact-levers takes place, said segment serving to exert a frictional action on the pointed outer edge of the contact-lever E, so as to remove any corroded particles produced by the sparking of the current at the contacts of the levers E and F. The contact-piece F is returned to its normal position of contact with the contact-lever E by a lifting-rod g and fulcrumed lever g'. Vertically below the funnel E' is arranged in the bracket A an opening a, having a flange a' at its upper edge, while below said opening is arranged a receiving-funnel H,

which is provided with a circumferential flange h , that is guided in grooved ways h' at the under side of the bracket A. The funnel H is provided with a suitable valve h^2 , having a stem h^3 . The funnel H serves to collect the sand or other material which is discharged from the main receptacle B and passed through the funnel E, so as to return it from time to time to the receptacle B, in which case the valve closing the bottom opening of the funnel H is opened, so that the contents of the funnel can be readily dropped into the receptacle B. The funnel H is then replaced to its normal position at the under side of the bracket A, as shown in the drawings.

The operation of my improved electric cut-off is as follows: Whenever a short-circuiting of the gas-lighting or other circuit at any point in the same takes place for some reason or other, the armature D' of the electro-magnet D is attracted, and thereby the valve-lever B^2 pushed sidewise, so as to open the bottom opening of the receptacle B and cause the discharge of the sand or other material from the same. The sand drops into the funnel E' at the inner end of the contact-lever E and causes the tilting of the same as soon as the weight of the sand overcomes the counterbalancing-weight at the outer end of the contact-lever E. As soon as the tilting takes place, the contact-piece F is dropped, and thereby the contact of the lever E and piece F interrupted. Consequently the gas-lighting circuit is broken, the battery cut out, and the valve-lever B^2 returned to its normal position by its spring b^2 , whereby the bottom opening of the receptacle is closed and the discharge of sand interrupted. By breaking the circuit by the action of the cut-off the running down of the battery, which would otherwise be the case, is prevented. The sand in the funnel E' is slowly discharged, after the contact-lever E has been tilted from the small opening at the bottom of the funnel E' , into the receiving-funnel H, after which the contact-lever E returns into its normal position, but without forming contact with the piece F. For producing the proper working of the gas-lighting or other circuit, it is necessary to re-establish the contact of the lever E and piece F, which is readily done by the setting-lever g' and rod g , by which the contact-piece is returned into raised position and into contact with the lever E. Whenever, therefore, the circuit is cut out, it is first necessary to find the defective place where the short-circuiting has taken place, restore the circuit to proper condition, and then re-establish the contacts of the lever E and piece F, after which the circuit is again in condition for proper working.

By means of the balance-weight of the contact-levers the length of time that passes before the contact is broken and the battery cut out is regulated. If a shorter time is desired, the balance-weight of the lever E is adjusted on its rod toward the fulcrum of the same,

while for a longer contact it is turned in the opposite direction on its threaded rod.

My improved cut-off for electric circuits is very reliable and effective in action, increases readily whenever the sand has run out from the main receptacle, so as to require the return of the same by the receiving-funnel, and prevents in a reliable manner the running down of the battery, as it indicates whenever short-circuiting has taken place, so as to necessitate the revision of the circuit, the repairing of the defective parts, and the restoring of the circuit to its normal condition of work.

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

1. In an electric cut-off, the combination of a receptacle for sand or other suitable material, a fulcrumed and spring-actuated valve-lever for closing the bottom opening of said receptacle, an electro-magnet in a normally-open circuit, an armature for operating said valve-lever, a fulcrumed and weighted contact-lever provided with a funnel vertically below the discharge-opening of the receptacle, and a pivoted and weighted contact-piece for the outer end of the contact-lever, the contact of the lever and contact-piece being interrupted by the tilting of the contact-lever whenever the circuit is short-circuited and the funnel filled with sand from the receptacle, substantially as set forth.

2. In an electric cut-off, the combination of a receptacle containing sand or other suitable material and having a bottom opening, a fulcrumed and spring-actuated valve-lever, a valve at the outer end of said lever below the bottom opening of the receptacle, an electro-magnet located in a normally-open circuit, an armature adapted to operate the valve-lever and open the receptacle, and a circuit-breaking device operated by the discharge of sand from the receptacle when short-circuiting takes place, substantially as set forth.

3. The combination of a supporting-bracket, a receptacle for the sand or other suitable material supported on said bracket and provided with a bottom opening, a fulcrumed and spring-actuated valve-lever, an electro-magnet in an electric circuit, an armature adapted to operate said valve-lever when attracted by the magnet, a fulcrumed contact-lever provided with a funnel vertically below the discharge-opening of the receptacle, a pivoted contact-piece for the outer end of the contact-lever, and a receiving-funnel below the funnel of the contact-lever supported in ways at the under side of the bracket, substantially as set forth.

4. In an electric cut-off, the combination of a receptacle for sand or other suitable material, a fulcrumed contact-lever provided with a funnel at one end below the discharge-opening of the receptacle and with an adjustable weight at the opposite end, and a pivoted and weighted contact-piece having a

stop-shoulder for the contact-lever, the weight of said lever serving to regulate the length of time after which the tilting of the lever takes place, substantially as set forth.

5 5. In an electric cut-off, the combination of a receptacle for sand or other suitable material, a fulcrumed and weighted contact-lever, a funnel attached to the end of said lever below the discharge-opening of the re-
10 ceptacle, a pivoted and weighted contact-piece having a stop-shoulder for the contact-lever, and a setting-lever and pin for return-

ing the contact-levers into their normal position of contact after a cutting out of the battery has taken place, substantially as set forth. 15

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ADOLPH T. SMITH.

Witnesses:

PAUL GOEPEL,
MARTIN PETRY.