

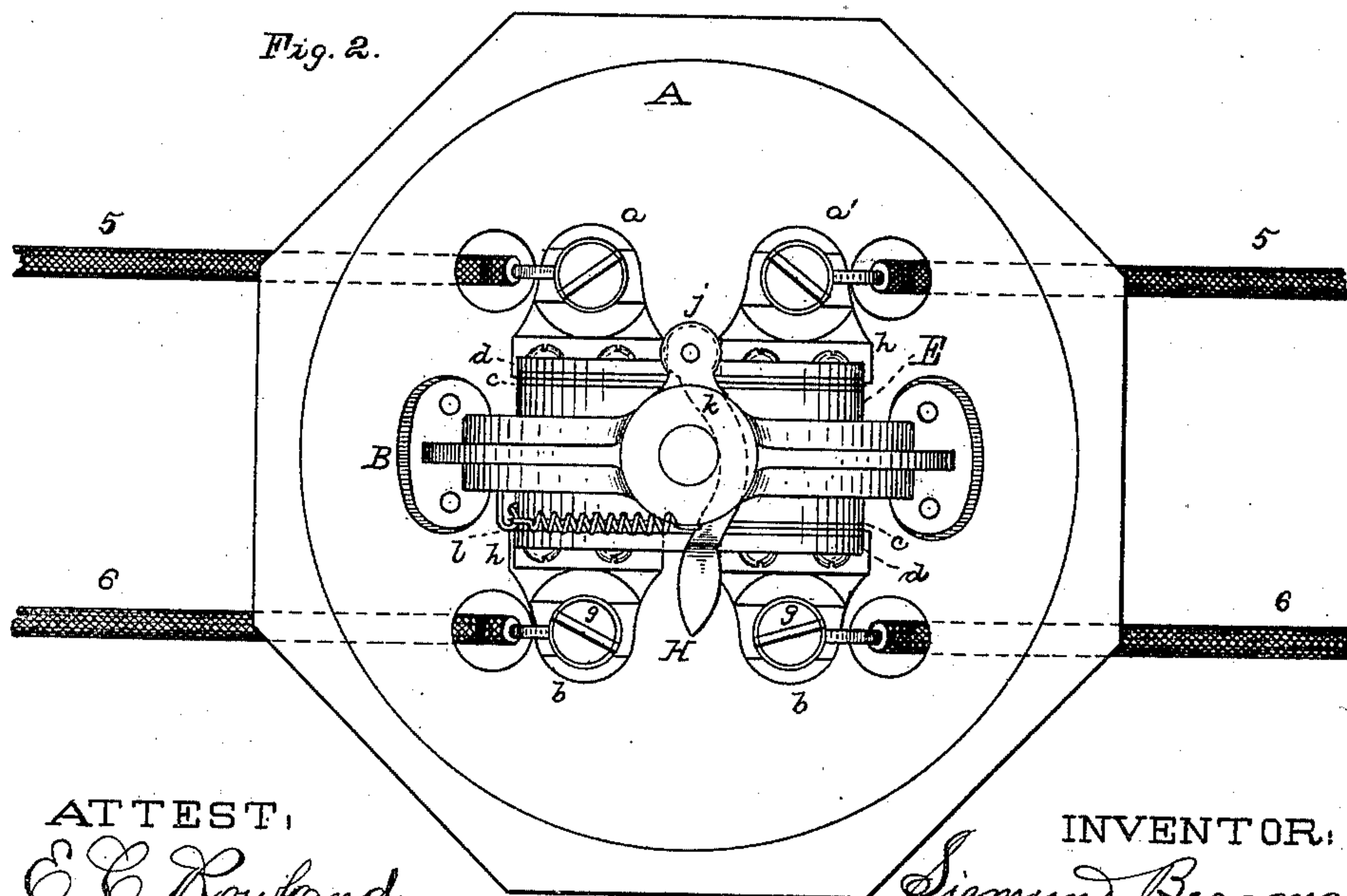
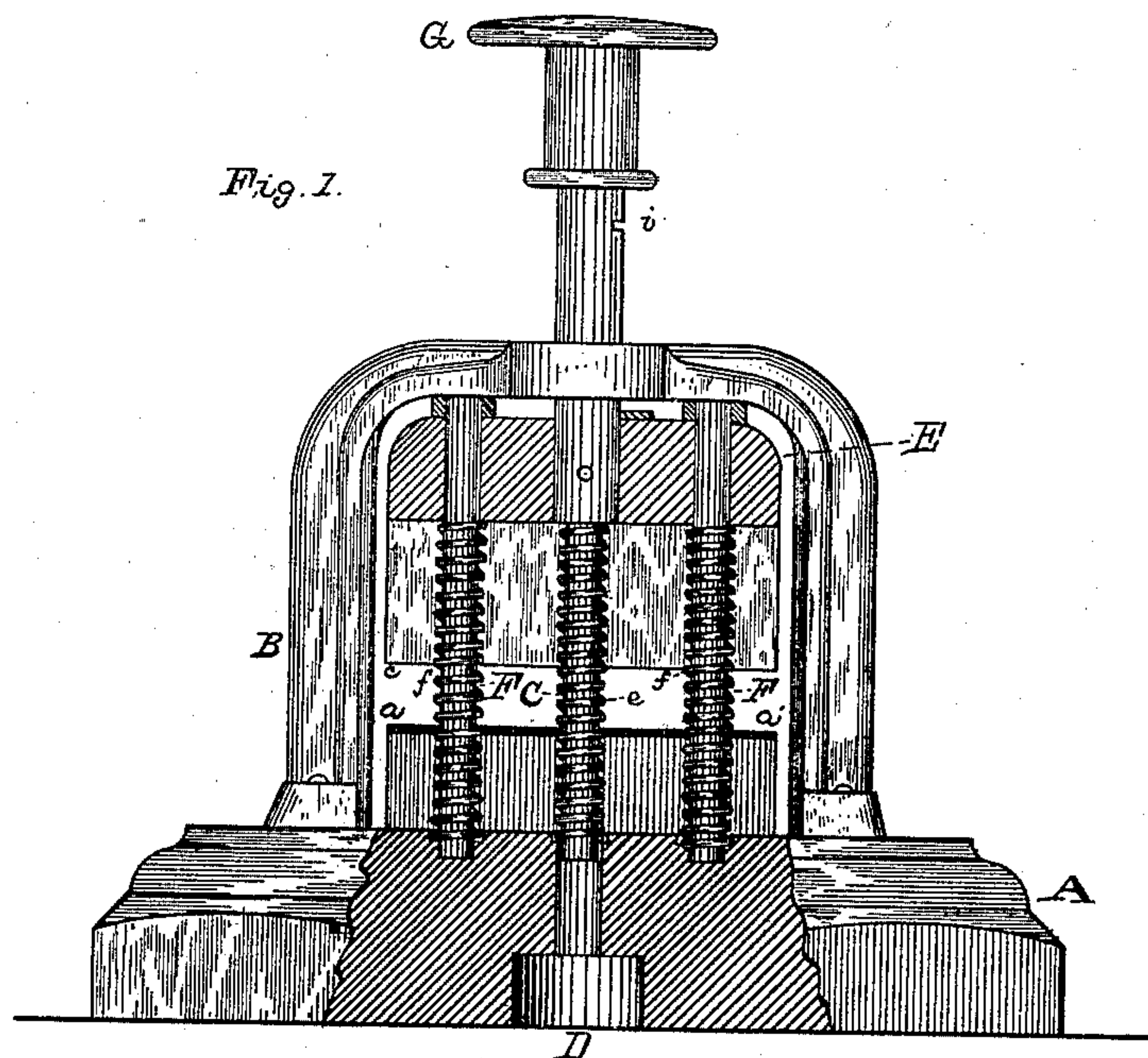
(No Model.)

2 Sheets—Sheet 1.

S. BERGMANN.
ELECTRICAL SWITCH.

No. 341,723.

Patented May 11, 1886.



ATTEST,
E. C. Rowland,
W. W. Seely

INVENTOR:
Sigmund Bergmann,
By Rich^d. A. Dyer,
Att^y.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

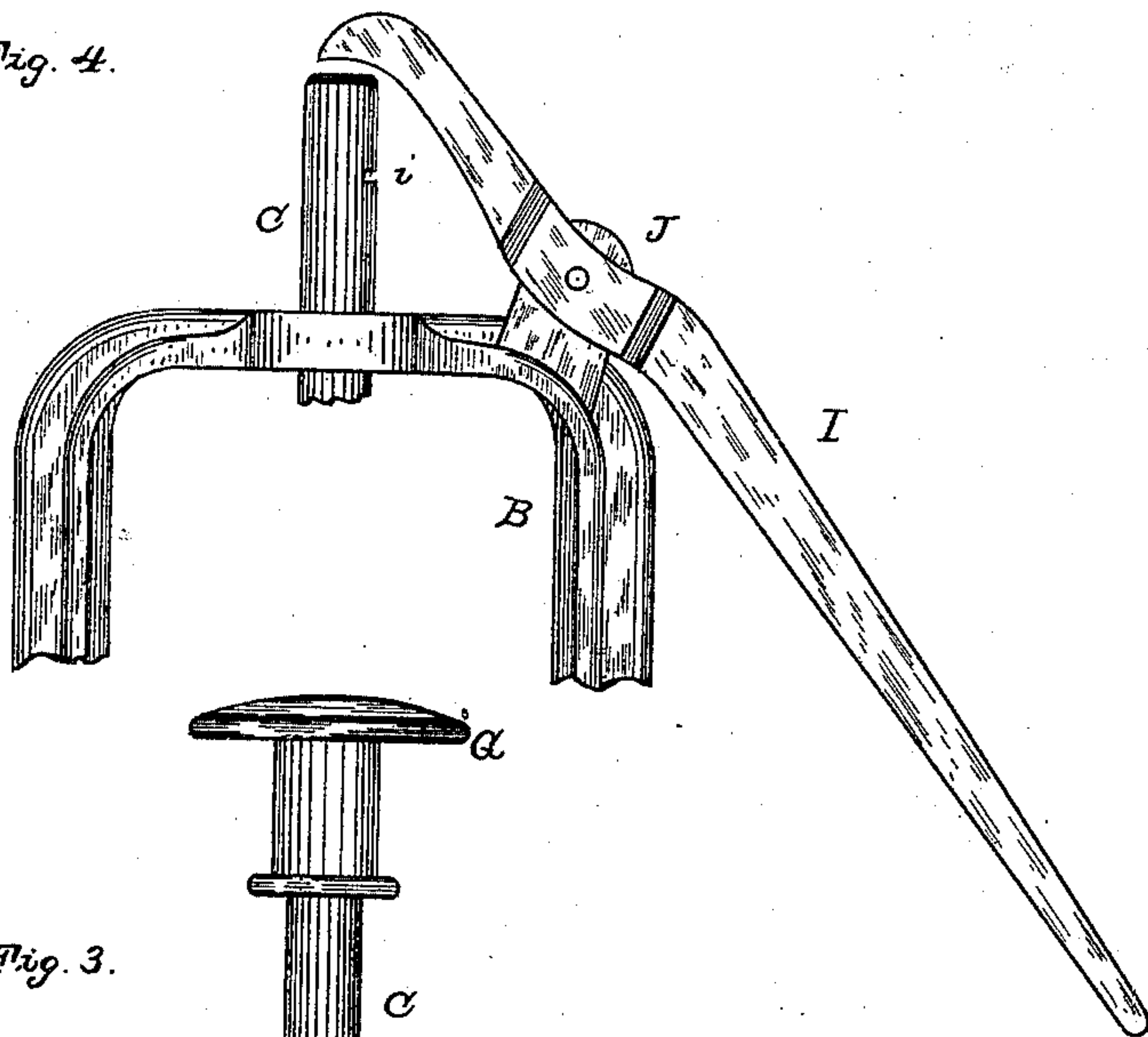


Fig. 3.

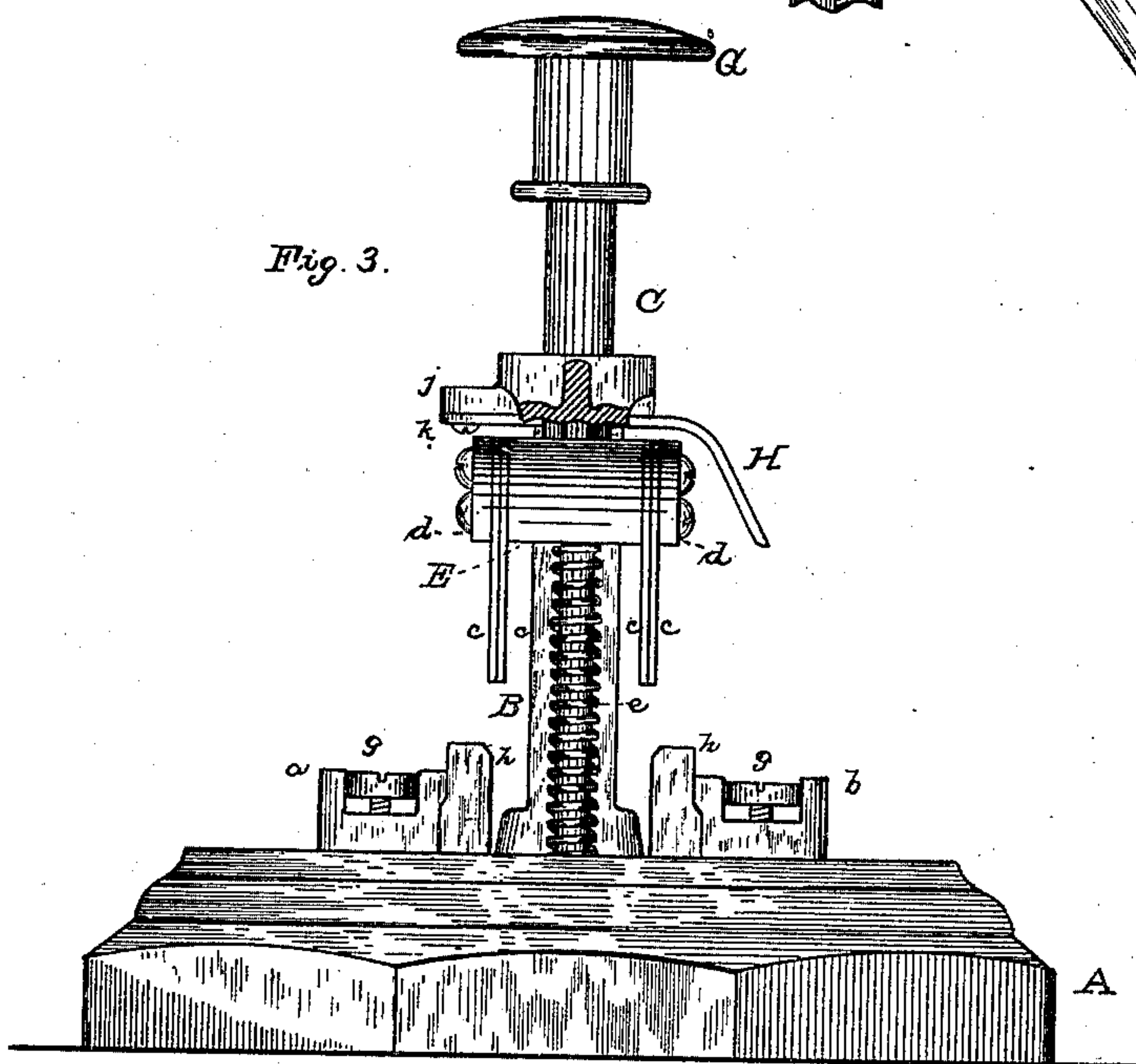
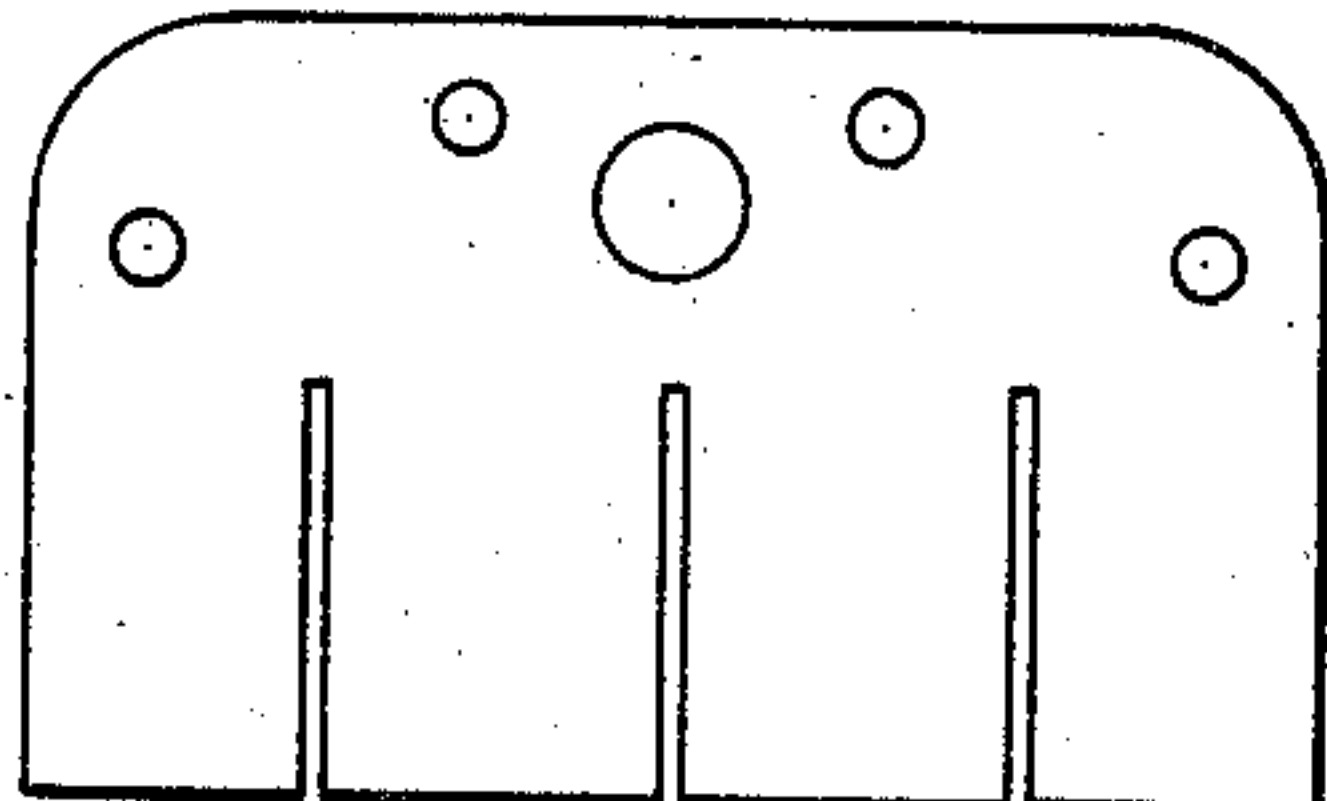


Fig. 5.



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UNITED STATES PATENT OFFICE.

SIGMUND BERGMANN, OF NEW YORK, N. Y.

ELECTRICAL SWITCH.

SPECIFICATION forming part of Letters Patent No. 341,723, dated May 11, 1886.

Application filed January 8, 1883. Serial No. 81,300. (No model.)

To all whom it may concern:

Be it known that I, SIGMUND BERGMANN, of the city, county, and State of New York, have invented a certain new and useful Improvement in Electrical Switches, of which the following is a specification.

The object of my invention is to provide a simple and efficient switch or circuit-controller for electrical circuits, and one which shall act upon both conductors or poles of a circuit simultaneously, a single movement sufficing to open or close both poles of the circuit, such switch being of simple and economical construction and easy and efficient of operation, and especially adapted for use in the multiple-arc circuits of incandescent electric lighting systems. Such switch, however, embodies devices which may be used in cases where only one pole of a circuit is to be controlled; and my invention consists in the various novel devices and combinations of devices employed by me for accomplishing the above object, as fully hereinafter set forth and claimed.

Said invention is illustrated in the accompanying drawings, in which Figure 1 is an elevation and partial vertical section of a switch embodying the invention; Fig. 2, a top view of the same with the hand-piece removed; Fig. 3, a side view of the switch with the arched standard broken away; Fig. 4, a view representing the preferred form of operating device for large switches, and Fig. 5 an elevation of one of the contact-plates.

A is a base, formed of non-combustible and non-carbonizable insulating material, soap-stone being a very suitable substance for this purpose. This base is intended to be secured to a floor or wall in any convenient position. Upon this base are secured four metal plates, *a a'* and *b b'*.

To the plates *a a'* are connected, respectively, the wires 5 5, forming one side or pole of a circuit, and to the plates *b b'* are connected, respectively, the wires 6 6, which form the other portion of the circuit. Such circuit 5 6 is preferably a multiple-arc circuit of an electrical distribution system, as in circuits of this character it has been found especially desirable to control both poles simultaneously.

Upon the base A is fastened the arched standard B. Through an aperture in the top

of standard B passes a rod, C, whose lower end enters an aperture, D, in the base A. Upon the rod C is placed a block, E, of an insulating substance, such as vulcanized fiber, hard rubber, wood, or other suitable insulating material. To each side of block E are attached two thin metal plates, *c c*, held by screws passing through plates *d d*, but extending below such plates, and having their lower portions divided, Fig. 5, so as to form several flat contact-springs. Of course only one plate *c* might be attached to each side of block E, and such plates might be secured without the use of plates *d d*; but to give the plates elasticity they are made double, and by the use of the plates *d d* a secure fastening is formed. Around a portion of the rod C is coiled a spiral spring, *e*, which, when the rod C and block E are pushed down, is compressed. Guide-rods F F are secured to the standard B and base A, each being provided with a spiral spring, *f*, and such rods pass through the insulating-block E, so that when such block is pushed down these springs also are compressed. The rod C may be provided with the flat hand-piece G for convenience in forcing it down against the resistance of the springs; but this would only be used with light switches.

The plates *a a'* and *b b'* are preferably provided with screws *g g*, for securing the circuit-wires. An upwardly-extending portion, *h*, is formed on the inner side of each plate, such piece *h* being slightly beveled, as shown. When the rod C is forced down, the flat contact-springs *c c* strike the beveled edges of *h h* and are forced down behind the plates *a a'* and *b b'*, closing circuit across said plates. The contacts formed in this manner are very close, the opposing plates being firmly pressed together and rubbing or scraping against each other, so that the surfaces are constantly kept smooth and polished.

The plates *c c*, being divided into several springs, are adapted to meet any inequalities in the plates *a a'* or *b b'*, so that good contact is provided at all points.

Means are provided for holding the rod C down after contact is made, and also for quickly and easily releasing said rod when it is desired to break the circuit. Preferably such

means consists of a notch, *i*, in the rod C, a spring-catch being attached to the standard B, which enters such notch to lock the rod, and is withdrawn therefrom when it is desired to release such rod.

To the lower side of a lug, *j*, projecting from the top of standard B, is pivoted the catch *k*, which is curved to pass around rod C, and has a projecting handle, H. The catch *k* is held against the side of rod C, which contains notch *i*, by a spiral spring, *l*, secured to the standard B. When the rod C is pressed down to the proper point, catch *k* enters the notch *i* and holds the rod down, the catch *k* being held in said notch by spring *l*.

When it is desired to break the circuit, the handle H is drawn back, the catch *k* leaves the rod C, and the springs *e* and *f* force said rod up, breaking the contacts with the plates *a a'* and *b b'* and opening both poles of the circuit 5 6.

Rubber cushions *m m* are provided to deaden the force of the blow when block E strikes the top of standard B.

For large switches, in which powerful springs are used and considerable exertion is necessary to force down the contacts, I prefer to employ, instead of the flat hand-piece G, a lever, preferably such as is illustrated in Fig. 4. Here the lever I is pivoted to the standard B at J, its end projecting over the top of rod C, so that when the handle of the lever is raised the rod C is pressed down. By this means less power is required to operate the switch.

The switch above described is one of unusual efficiency and utility. The contacts made by it are firm and good and of large surface and mass of metal.

The whole apparatus is of solid and durable construction, the manipulation is easy, and the circuit is broken by a quick movement, preventing the formation of an injurious spark. The spark is also lessened by the breaking of the circuit at four different points.

I do not claim as my invention the broad idea of controlling both poles of a multiple-arc circuit, or the breaking of both poles simultaneously and by a single movement, or the

mounting upon one base of the contacts for the two poles and means for opening and closing circuit at said contacts, for I believe such to be the invention of Edward H. Johnson, of New York city; but

What I do claim is—

1. In an electrical switch, the combination, with a multiple-arc electric circuit, both poles of which are broken and connected to suitable terminals, of two contact-pieces, one for each side of the circuit, means for simultaneously moving both of said contact-pieces into connection with their respective pairs of terminals, and independent means for simultaneously locking or releasing said contact-pieces, substantially as set forth.

2. In an electrical switch, the combination, with the reciprocating circuit-controlling rod, of an insulating-block rigidly attached to said rod and contact-plates attached to opposite sides of said block, substantially as set forth.

3. In an electrical switch, the combination, with the reciprocating rod carrying the circuit-controlling contacts and having the notch *i*, of the spring-catch *k*, entering said notch, the handle H, for withdrawing the catch from the notch, and the springs *e f*, for forcing the rod and contacts up again, substantially as set forth.

4. In an electrical switch, the combination, with the stationary contact-plates having upwardly-extending parts *k*, of the reciprocating divided spring-plates *c*, means for forcing such spring-plates upon the contacts, and independent means for holding and releasing the spring-plates, substantially as set forth.

5. The combination, with the insulating-base, of the contacts mounted thereon, the arched standard, the rod passing through said standard and carrying plates for connecting the contacts on the base, the guide-rods, the retracting-spring, and the spring-catch, substantially as set forth.

This specification signed and witnessed this 18th day of December, 1882.

SIGMUND BERGMANN.

Witnesses:

WM. H. MEADOWCROFT,
H. W. SEELY.