

A. D. CAYWOOD.
THERMOSTATIC CIRCUIT CLOSER.

APPLICATION FILED AUG. 12, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

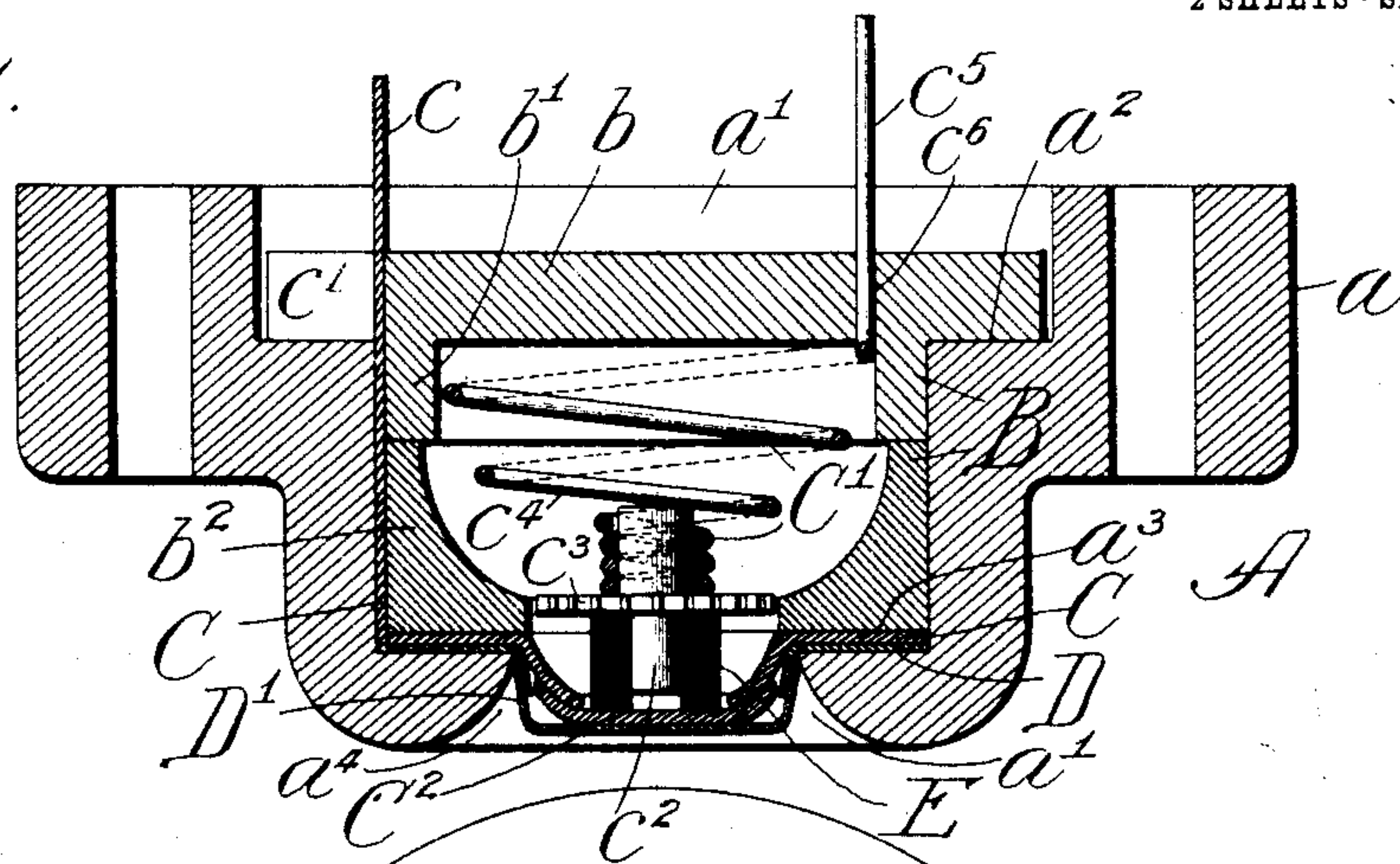


Fig. 2.

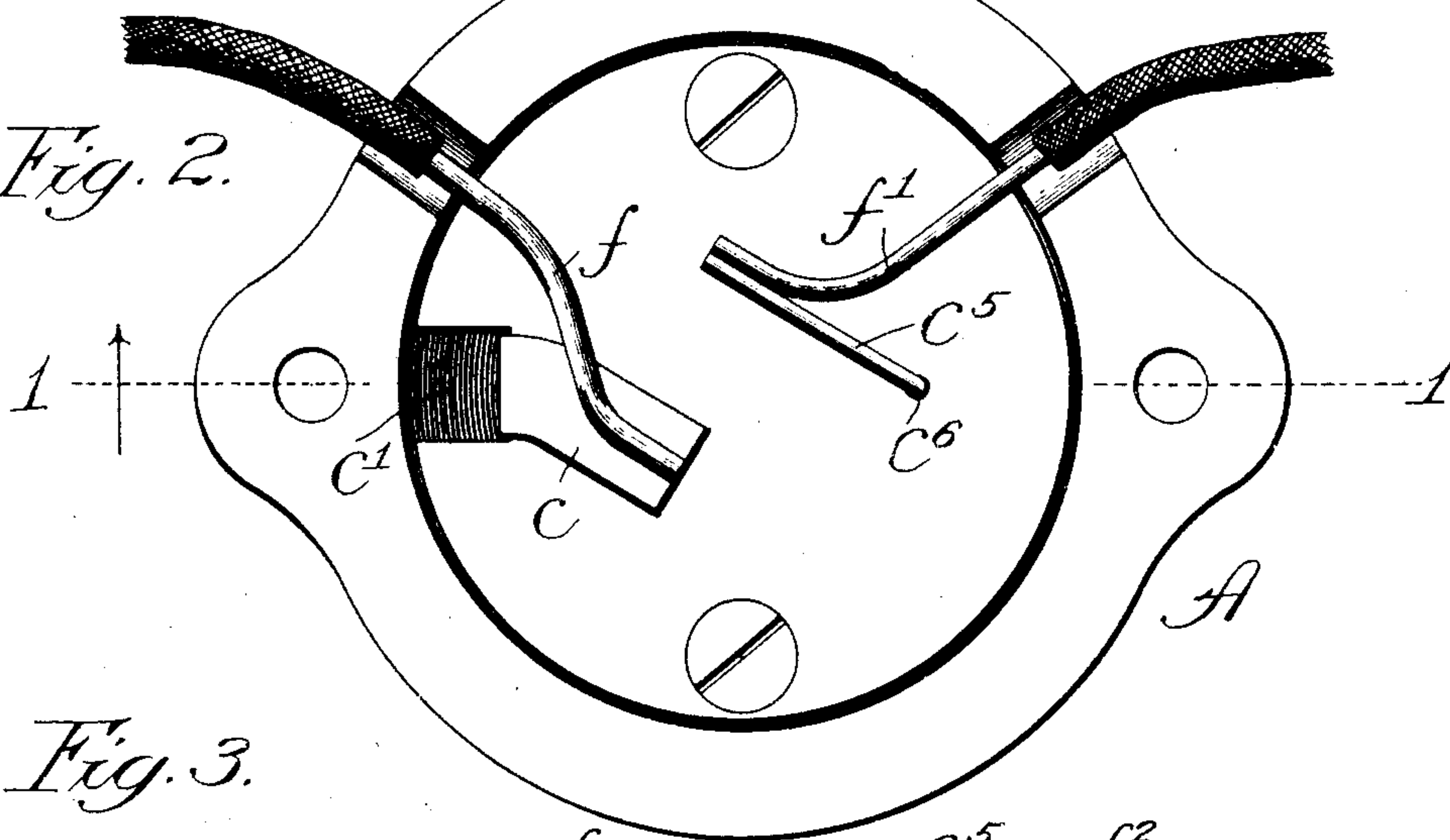
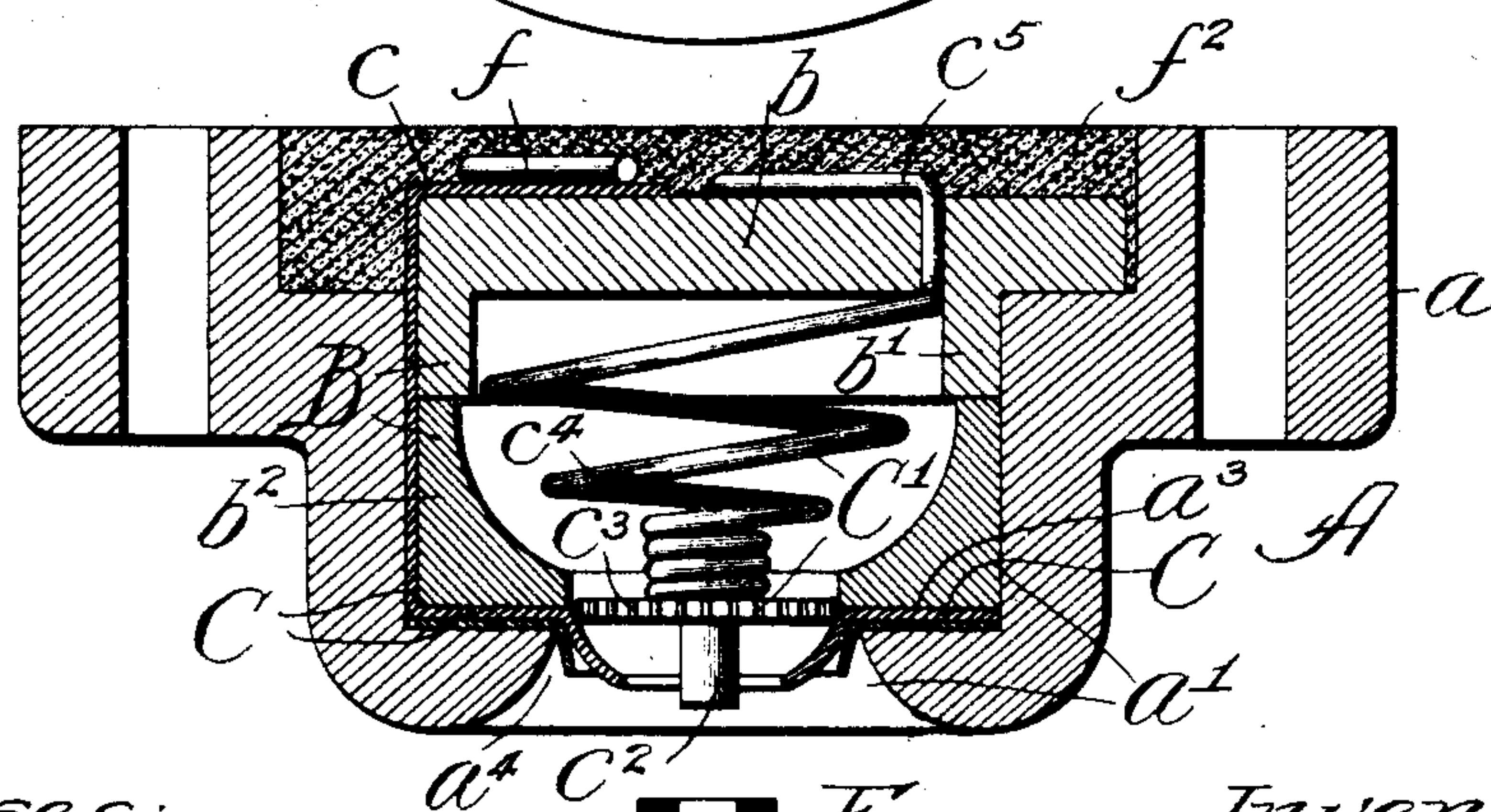


Fig. 3.



Witnesses:

Enders Gaylord.
John Enders.

Inventor:

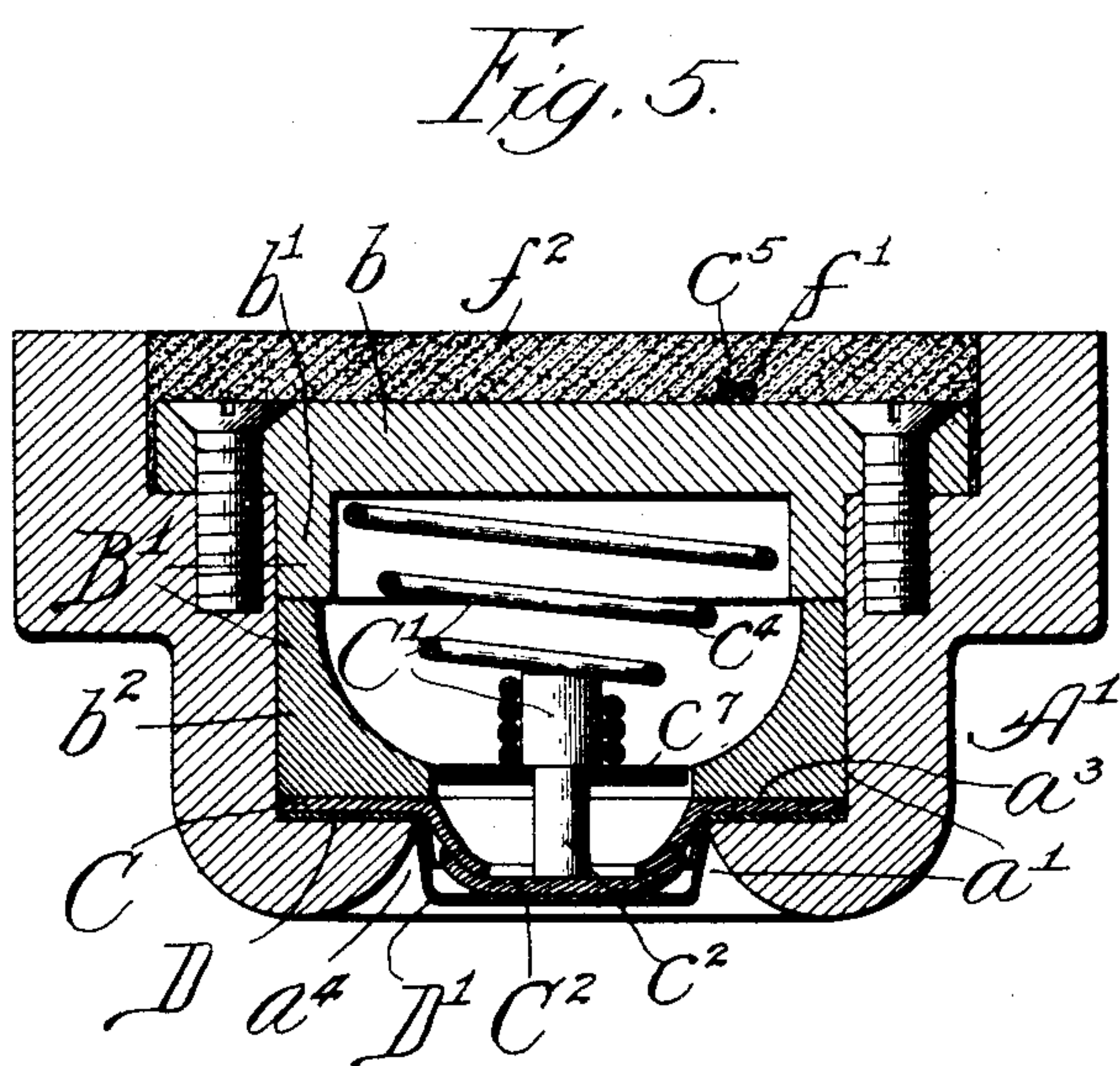
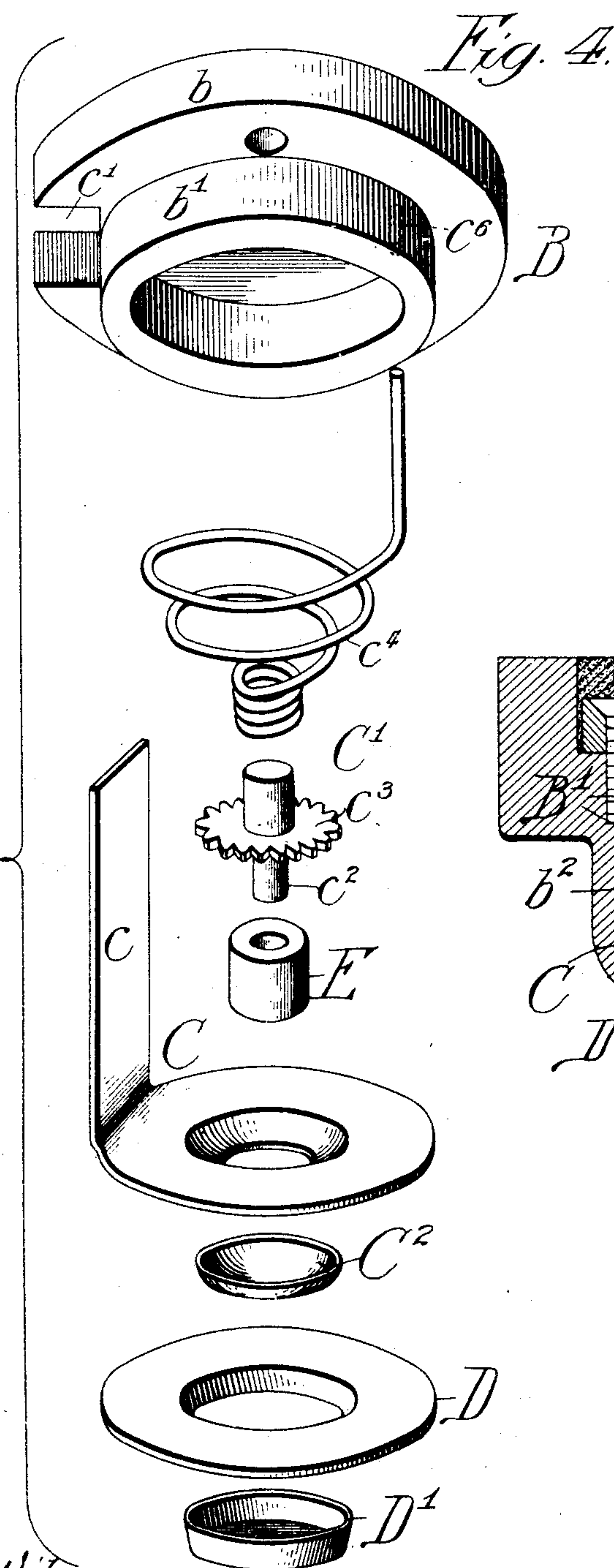
Albert D. Caywood,

By Dyrenforth, Dyrenforth & Lee,
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2 SHEETS—SHEET 2.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

ALBERT D. CAYWOOD, OF CHICAGO, ILLINOIS.

THERMOSTATIC CIRCUIT-CLOSER.

SPECIFICATION forming part of Letters Patent No. 791,182, dated May 30, 1905.

Application filed August 12, 1904. Serial No. 220,511.

To all whom it may concern:

Be it known that I, ALBERT D. CAYWOOD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Thermostatic Circuit-Controller, of which the following is a specification.

My invention pertains particularly to means for controlling an electric circuit of a fire-alarm system; and my primary object is to provide a thermostatic circuit-controller possessing great certainty of operation and free from liability of corrosion or injury from external influences or causes.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional view of my improved device for use in a normally open circuit before the terminals have been connected with the circuit-wires and cemented in place, the section being taken as indicated at line 1 of Fig. 2; Fig. 2, a top plan view after the circuit-wires have been connected; Fig. 3, a section similar to that shown in Fig. 1, but showing the terminals covered with cement and illustrating the condition after operation; Fig. 4, a perspective view of the internal parts and the top plate of the device shown in the preceding figures; and Fig. 5, a sectional view illustrating a modified construction for use in a normally closed circuit.

A description of the preferred construction for use in a normally open circuit is as follows: A represents an external casing, which may be of porcelain, said casing having an external flange a and a vertical bore a' , stepped to provide annular internal shoulders or steps a^2 a^3 , the reduced lower end of said bore being also countersunk or chamfered, as indicated at a^4 ; B, an internal casing or barrel comprising a disk b , bearing on the shoulder a^2 and having a downwardly-extending barrel-section b' and a ring or barrel section b^2 , upon which the barrel-section b' is supported; C, a contact member located between the inner and outer casings; C', a contact member confined within the inner casing or barrel; C², a cap having solder connection with the dished perforate portion of the member C; D, a celluloid washer sup-

ported on the shoulder a^3 and in turn supporting the member C; D', a celluloid cap fitting onto the depressed central portion of the washer D, and E an insulating-ring supported by the cap C² and normally serving to hold the contact member C' out of engagement with the member C. The casing A is provided at its flange a with perforations for receiving screws, by means of which the device may be attached to a ceiling or wall. The disk b of the inner casing fits within the enlarged upper end of the external casing and constitutes a closure for the outer casing, being secured by means of screws, as shown. The contact member C comprises a washer having a downwardly-dished central portion and provided at its periphery with a terminal c , which extends upwardly through a channel between the barrel B and the wall of the bore a' and protrudes through an opening c' in the flange, forming portion of the disk b . The dished or conical portion of said last-named washer lies beneath the bore of the inner barrel B. The contact member C' comprises a stem c^2 , extending into the upper portion of the insulating-ring E, and a toothed metallic member c^3 , fixed thereon and bearing on the ring E, and a cone-spring c^4 , confined between the member c^3 and disk b and having a terminal or extension c^5 , protruding through a perforation c^6 in the disk b . The relatively large upper end of the cone-spring is in substantial contact with the inner wall of the barrel-section b' , and the toothed member c^3 is in substantial contact with the inner wall of the barrel-section b^2 , so that the inner contact member C' is properly centered and guided. As already indicated, the member c^3 normally is held out of contact with the dished portion of the member C by means of the insulation E, resting on the solder-supported cap C². The terminals c c^5 are bent over above the disk b and connected with circuit-wires f f' , as shown in Fig. 2. The top surface of said disk lies below the upper surface of the casing A, and that portion of the bore a' which lies above said disk is filled with cement f^2 , thereby embedding the terminals. The cap C² is sheathed by the cap D', and thus the whole device is neat in ap-

pearance and free from danger of corrosion. The cap D' lies within the countersink at the lower or outer end of the bore a' and is free from injury. It now will be understood that
 5 when subjected to heat of predetermined degree the solder will loosen, permitting the spring c^4 to force the member c^3 into contact with the member C, thereby completing the circuit through the contact members C and
 10 C'. When this action occurs, the caps C² and D' and the member E drop, as shown in Fig. 3, assuming, of course, that the heat has not been sufficient to destroy the celluloid cap, which cap in any event does not prevent the
 15 heat from readily fusing the solder supporting the cap C².

In the construction for normally closed circuits (shown in Fig. 5) A' represents the outer casing, and B' the inner casing. The
 20 remainder of the construction is the same as that already described, except that the insulation E is dispensed with, the metallic member c^3 is replaced by an insulating-washer c^7 , and the stem of the contact member C' bears
 25 directly on the metallic cap C². In this construction it is noted that the section of Fig. 5 is at right angles to the section of Fig. 3, which accounts for the failure to show the terminals in the same manner. It is evident
 30 that when the cap C² is forced from its place the connection will be destroyed, the washer c^7 operating to keep the stem centered and out of contact with the dished portion of the contact member C.

It is noteworthy that the two constructions shown possess the same features of advantage as regards neatness and security of housing and certainty of operation, and it
 40 will be understood that various modifications of construction within the spirit of the invention so far as it pertains to these common features of construction may be made without departure from my invention.

From the foregoing it will be understood
 45 that no undue limitation is to be understood from the foregoing detailed description.

What I regard as new, and desire to secure by Letters Patent, is—

1. The combination of an outer casing, a
 50 contact member therein, an inner casing, a potentially-movable contact member therein and separated from the outer contact member by the walls thereof, and fusible means normally restraining the inner contact mem-
 55 ber from movement, for the purpose set forth.

2. The combination of an outer insulation-casing having a bore extending therethrough, a contact member therein, an inner two-part insulation-casing having a bore closed at one
 60 end, an inner contact member with a coil-spring for effecting movement, the outer contact member projecting into the path of the inner contact member, and fusible means normally restraining the inner contact mem-
 65 ber from movement, for the purpose set forth.

3. The combination of an outer insulation-casing having a bore with portions of successively-reduced diameter, forming internal shoulders, a contact member therein, an inner insulation-casing conforming to the bore
 70 of the outer casing, and an inner contact member with a coil-spring confined in the inner casing, fusible means serving normally to hold the spring under tension being included in the construction, for the purpose
 75 set forth.

4. The combination of a casing having a bore a' provided internally with shoulders a^2 a^3 , a contact member having a washer supported from the shoulder a^3 , an inner casing
 80 with a closed top, a contact member inclosed by the inner casing, and fusible means serving normally to prevent movement of the inner contact member, for the purpose set forth.
 85

5. The combination of a casing having a stepped bore, a contact member having a washer supported from one step of the bore, a solder-supported cap connected with said
 90 washer, a non-corrosive cap protecting said first-named cap, an inner insulation-casing, and a spring-equipped, normally restrained contact member within the inner casing, for the purpose set forth.

6. The combination of a casing having a
 95 stepped bore, a celluloid washer supported on one step of the bore and having the central portion struck downwardly, a celluloid cap removably connected with the struck-down portion of said washer, a contact mem-
 100 ber having a washer bearing on said first-named washer, a cap having solder connection with said second-named washer, an inner casing of insulating material, and a contact member confined within said inner cas-
 105 ing and equipped with a spring, the inner contact member being held normally under restraint, for the purpose set forth.

7. The combination of a casing having a stepped bore, a contact member therein, an
 110 inner casing having a closed end located beneath the upper surface of the outer casing, a spring-equipped contact member within the inner casing, terminals leading from the contact members to the space above the top of
 115 the inner casing, wires connected with said terminals, cement filling above the top of the inner casing closing the bore of the outer casing at one end, a solder-supported member connected with the first-named contact mem-
 120 ber and serving normally to hold the second-named contact member against movement, and a non-corrosive removable member protecting said solder-supported member, for the purpose set forth.
 125

8. The combination of an outer casing, a contact member supported therein, an inner two-part casing having a top disk, a contact member confined within said inner casing, and
 130 terminals leading from said contact members

and passing above said disk, for the purpose set forth.

9. The combination of a casing provided with a bore, a contact member supported therein having a centrally-dished washer, a solder-supported member connected with the disk portion of said washer, an inner casing, a spring-equipped contact member within the inner casing, and an insulation member supported by the solder-supported member and normally holding said second-named contact member out of contact with said first-named contact member, for the purpose set forth.

10. The combination of a casing having a stepped bore, a contact member supported

on one step thereof, an inner two-part casing provided with a closed top, a solder-supported member connected with said contact member, an inner contact member comprising a cone-spring and a stem connected with the small end thereof and a toothed member connected with said stem, and an insulation-washer carried by the solder-supported member and serving normally to hold said toothed member out of contact with said first-named contact member, substantially as and for the purpose set forth.

ALBERT D. CAYWOOD.

In presence of—

L. HEISLAR,

WALTER N. WINBERG.