

No. 725,826.

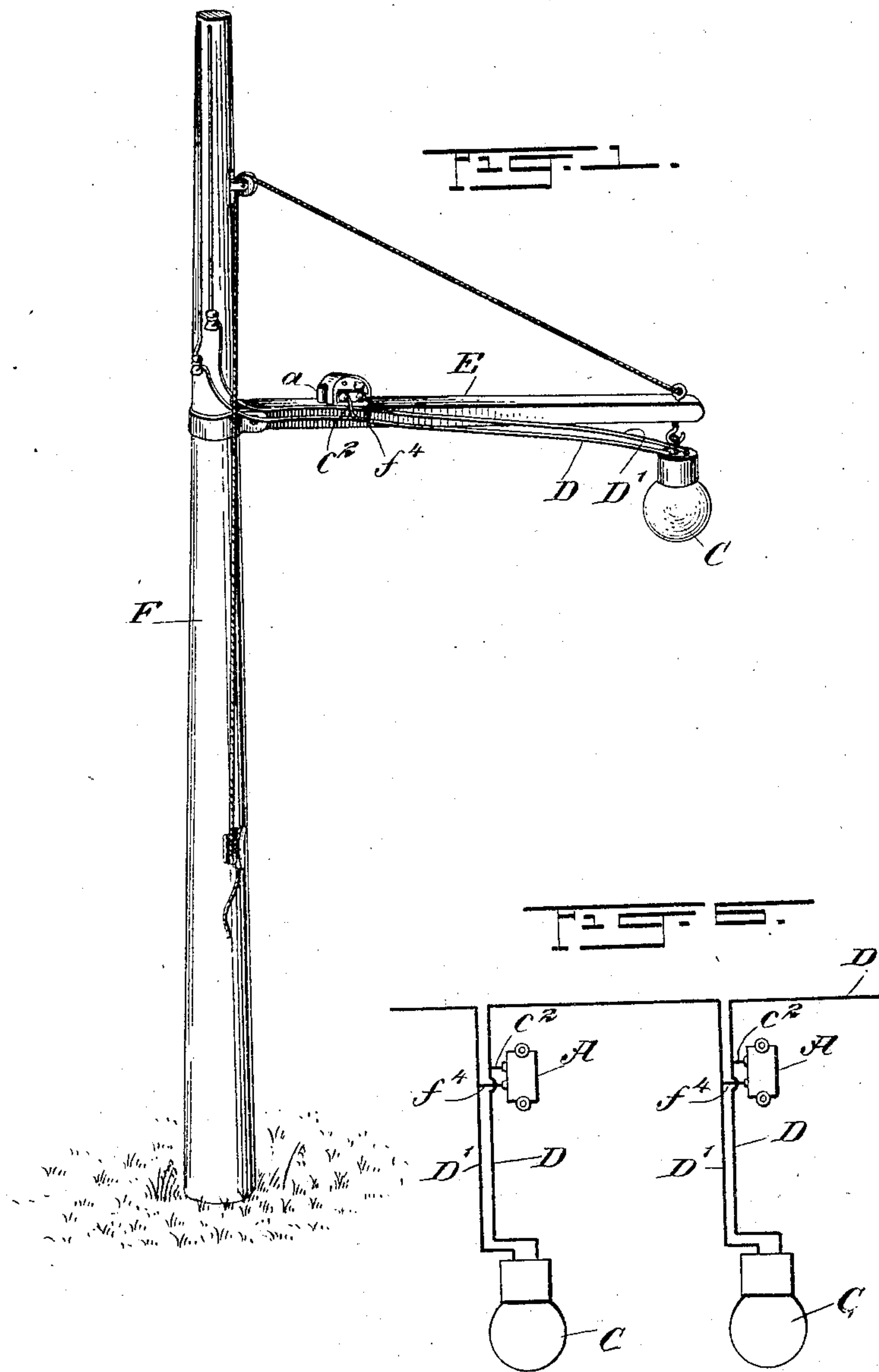
PATENTED APR. 21, 1903.

E. R. CLIFF.
ELECTRIC CURRENT SHUNTING DEVICE.

APPLICATION FILED MAR. 22, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

Julius White
A. F. Sweeney

INVENTOR

Edward R. Cliff

BY *M. J. Appleton*
ATTORNEY

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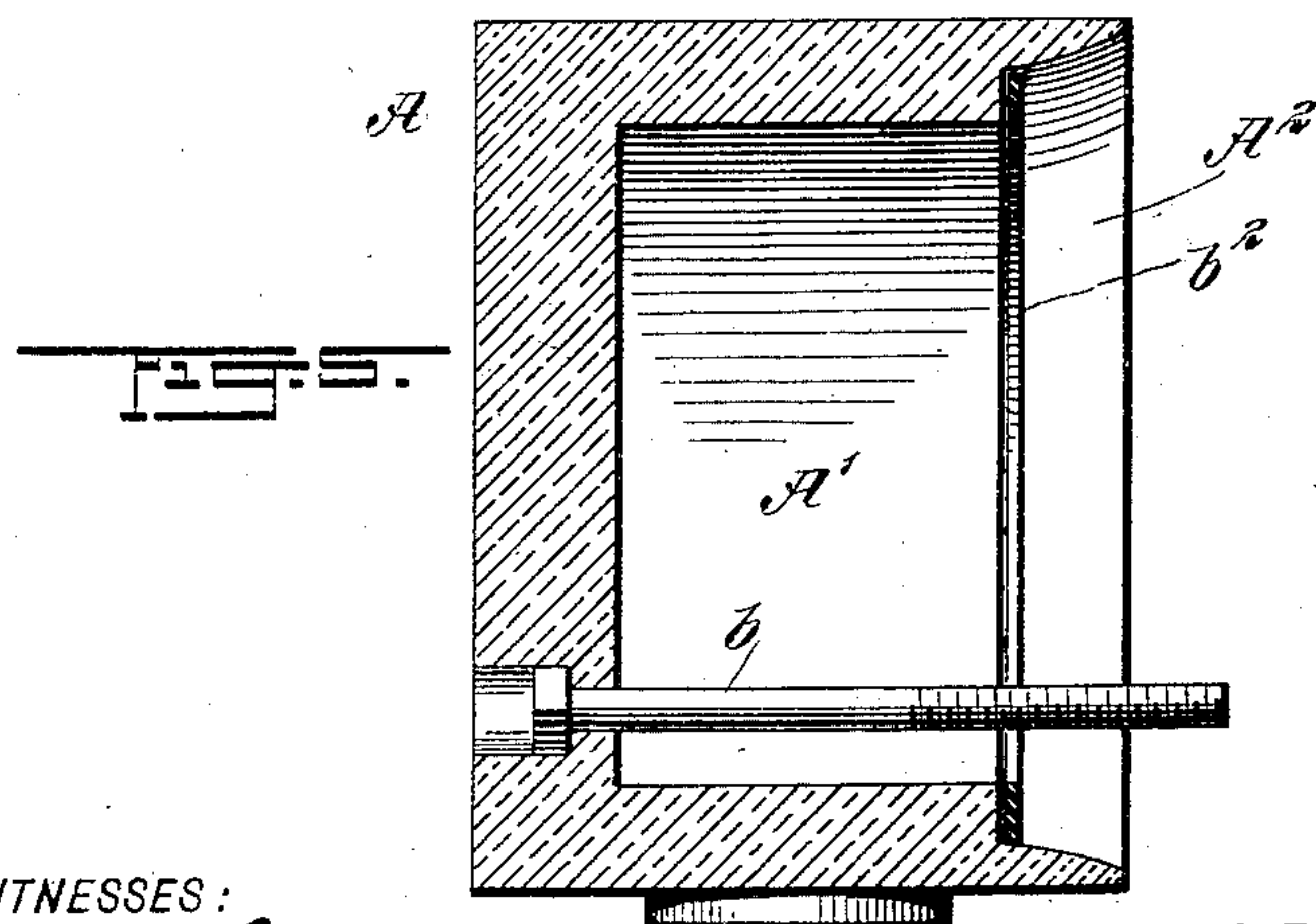
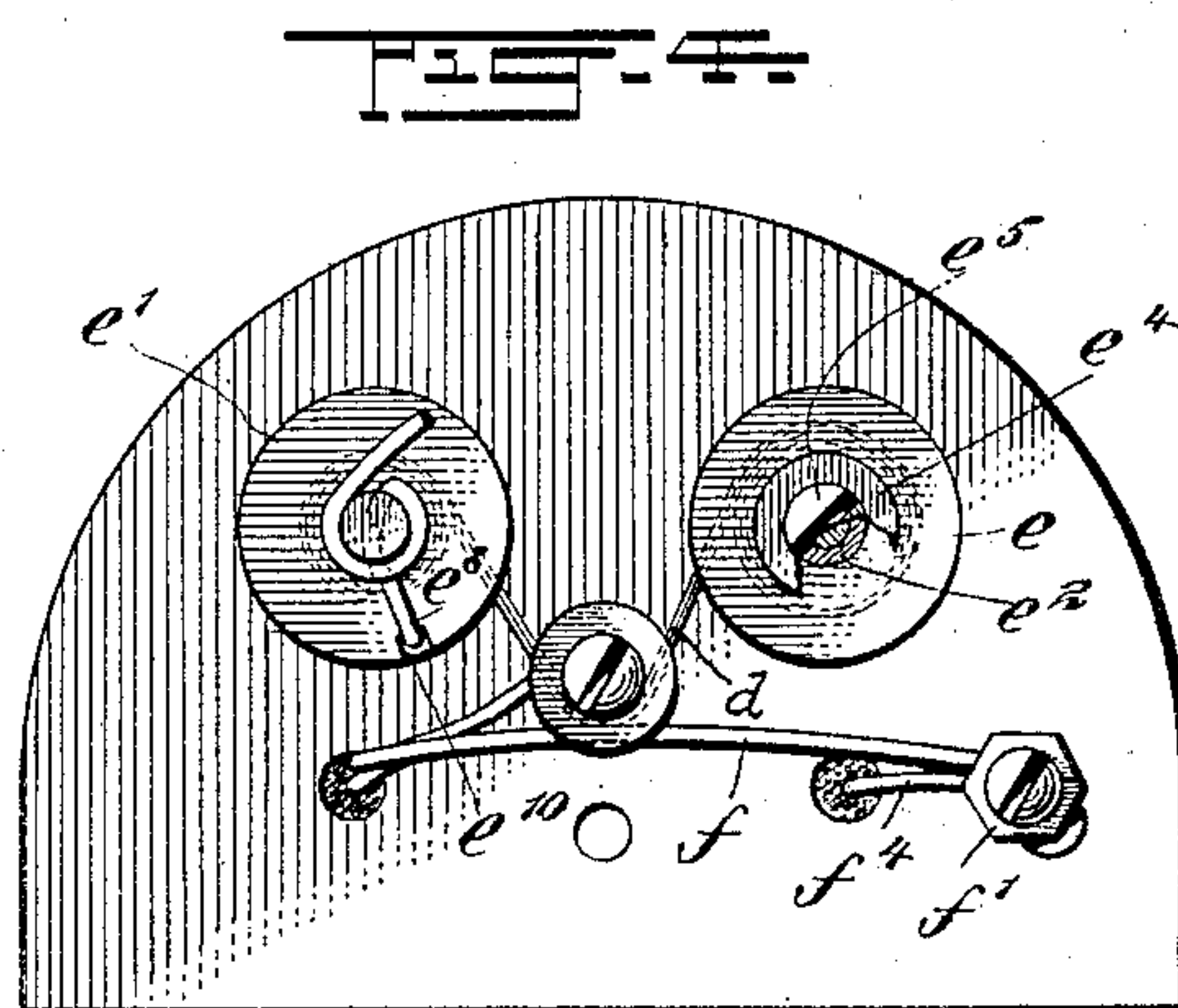
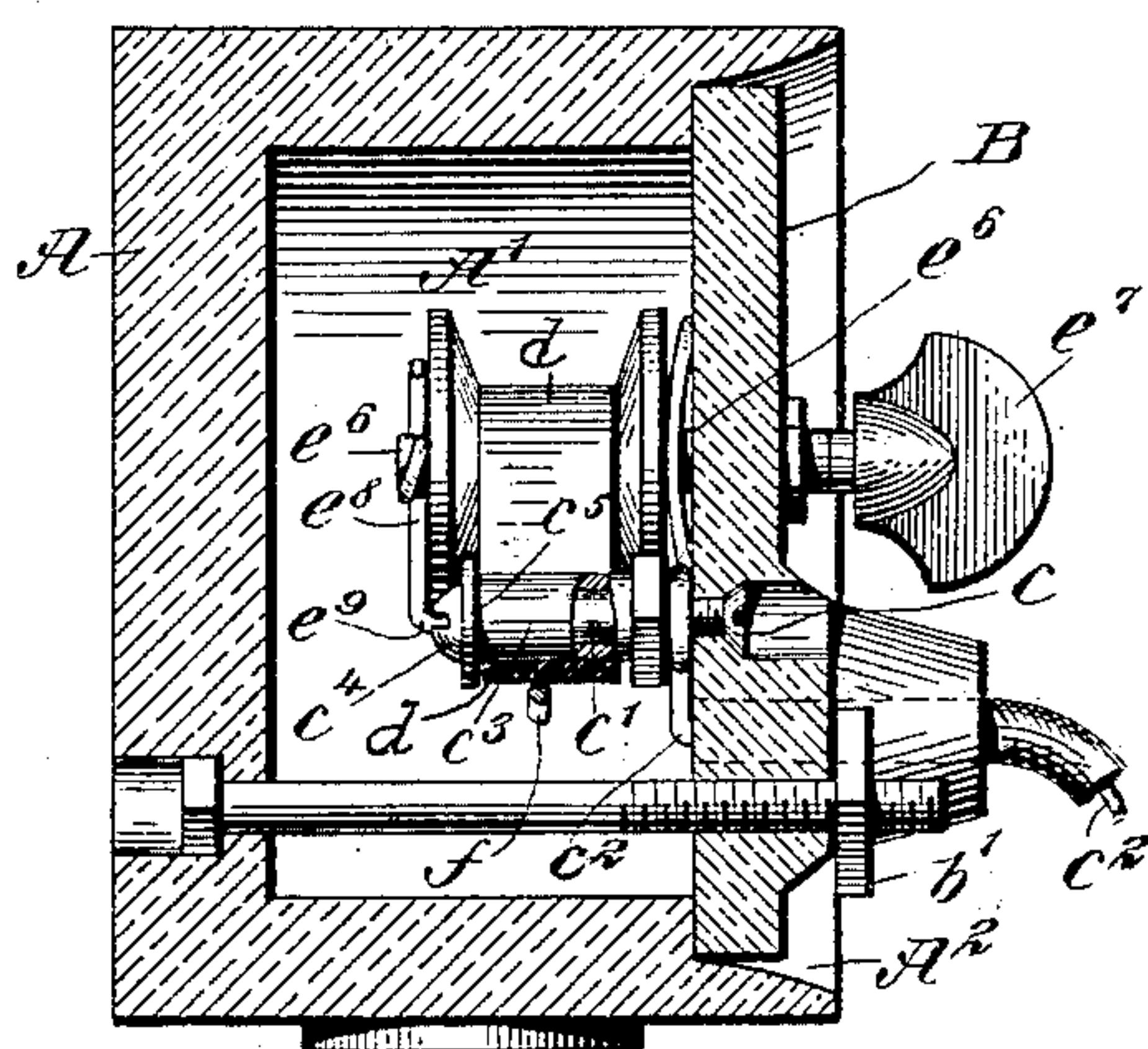
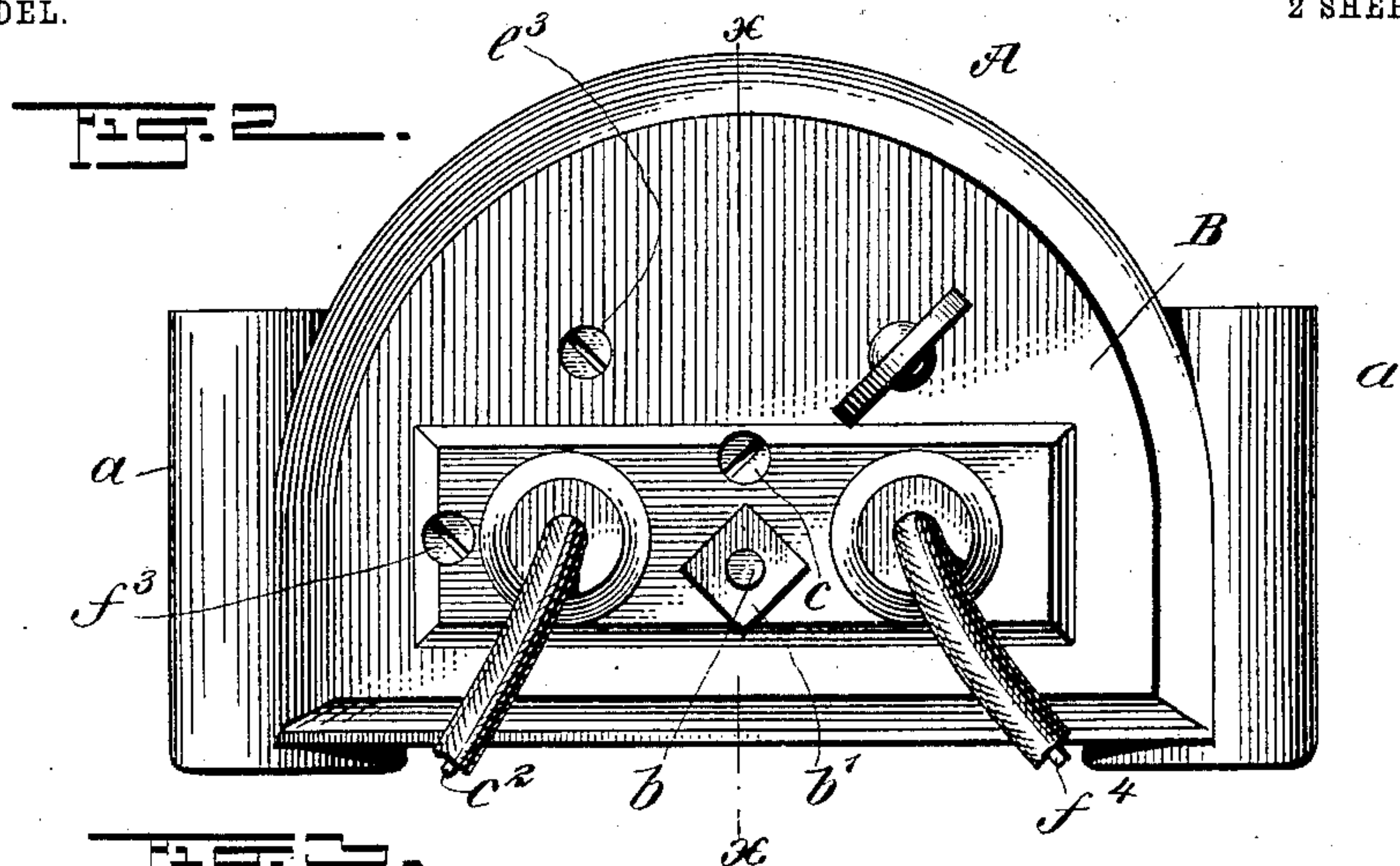
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2 SHEETS—SHEET 2.



WITNESSES:

Julius H. Hutch.

R. V. Sweeney.

INVENTOR

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UNITED STATES PATENT OFFICE.

EDWARD R. CLIFF, OF NEW YORK, N. Y.

ELECTRIC-CURRENT-SHUNTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 725,826, dated April 21, 1903.

Application filed March 22, 1902. Serial No. 99,447. (No model.)

To all whom it may concern:

Be it known that I, EDWARD R. CLIFF, a citizen of the United States, and a resident of New York, (West New Brighton,) in the county of Richmond and State of New York, have invented certain new and useful Improvements in Electric-Current-Shunting Devices, of which the following is a specification.

In Letters Patent No. 651,697 of the United States, dated June 12, 1900, I have shown a device of this character which while efficient in operation is more or less expensive in construction and when employed out of doors requires the addition of inclosing means whereby to protect its parts from the action of the weather.

The object of my present invention is to obviate these objections and to provide a current-shunting device which while simple in construction and affording complete protection from the weather to its various parts shall be adapted for ready use and application in and to any location where required and at the same time be more efficient in operation than those heretofore in use.

To these ends the invention consists in certain peculiarities of construction and combinations of parts, all as will hereinafter more fully appear.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a side elevation of an electric-conductor-supporting pole, showing an electric light supported therefrom through the intermediary of a horizontally-extending arm with my invention applied in connection therewith; Fig. 2, a side elevation of the current-shunting device constituting my invention detached; Fig. 3, a vertical transverse section of the current-shunting device, taken in the plane xx of Fig. 2; Fig. 4, an inner face view of the cover of my improved current-shunting device detached, showing in elevation the various parts carried thereby; Fig. 5, a vertical transverse section of the housings of the current-shunting device, also taken in the plane xx of Fig. 2, with the cover thereof removed and showing in transverse section a packing-strip that may be employed when desired; and Fig. 6, a diagrammatic view of two electric lamps and their current-supplying con-

ductors arranged in series with my invention applied in connection with them.

In all the figures like letters of reference are employed to designate corresponding parts.

A indicates the main body of the housings, which is or may be constructed in any approved form and is provided with suitable ears a , whereby it may be secured in place, and with a chamber or recess A' for reception and accommodation of the principal operating parts of the device.

B indicates a cover by means of which the chamber or recess A' in the portion A may be closed and the parts therein contained protected from the moisture or the weather. This cover, like the portion A, may be constructed in any approved form; but in the embodiment selected by me for purposes of illustration it is made in plate form and of substantially the same contour in its outlines as that of the chamber or recess A' , in connection with which it is to be employed. As thus constructed this cover is preferably, though not necessarily, received within a recess A^2 , formed by enlarging the mouth or outer end of the chamber or recess A' by rabbeting it, as shown, and the cover is firmly held therein when adjusted to place by a bolt b , which extends through the opposite walls of the portion A and through the cover itself and receives a nut b' at its outer free end.

In most cases the joint between the bottom of the recess A^2 and the inner face of the cover B will when clamped together be sufficiently close and tight without the employment of other means, as shown in Fig. 3. When, however, the joint thus made is not sufficiently close and tight, a packing b^2 may be employed between the bottom of the recess A^2 and the back of the cover, as shown in Fig. 5, or the space between the exterior edge of the cover and the interior surface of the side walls of such recess may be filled with wax or other cement, to allow for which expedient the inner side walls of this recess are flared or inclined outwardly, as illustrated. In the construction of these constituent parts A and B of the housing any appropriate material may be employed. I prefer, however, to construct them, or at least

the cover B, of porcelain, earthenware, glass, fiber, or other material that is a non-conductor of electricity, as insulation of the various parts of the device is thereby insured without the employment of other means.

Supported from the cover B or other convenient portion of the housing A by a screw c or otherwise and projecting within the chamber or recess A' is an electric contact c' , with which is connected an electric conductor c^2 , that extends outward through the cover or other appropriate part of the housing for connection with one of the conductors that lead to the lamp C—as, for instance, the conductor D in Figs. 1 and 6—while coöperating with this contact is a strip d , of non-conducting material. This non-conducting strip is preferably composed of paper, silk, or other appropriate non-conducting substance and resting against the contact c' is preferably supported at its opposite ends upon spools e and e' , about which they are respectively coiled. As thus disposed the spool e in my preferred form of construction is rotatively mounted on a stud e^2 , which may be fixedly secured to the interior side of the cover B or other convenient part of the housing in proper relationship to the contact c' by a screw e^3 or otherwise, with appropriate tension devices employed in connection therewith—as, for instance, a washer e^4 and screw e^5 —whereby to impart the required tension to the spool e , and thereby prevent its accidental rotation and the consequent unwinding of the end of the strip d therefrom. The spool e' , on the other hand, is mounted upon a stud e^6 , which is rotatively journaled in the cover B or other appropriate part of the housing in proper relationship to the contact c' and extending through to the outside of the same is provided on its outer end with a thumb-piece e^7 , whereby it may be rotated by the thumb and finger of a person when desired, an appropriate device e^8 for clutching the spool to the stud e^6 being employed, consisting in the form of the invention shown in the drawings of a wire passing through an orifice in the inner end of the stud and engaging with its overturned end e^9 with an appropriate notch e^{10} , formed in the spool. By this arrangement, as will be seen, the movement of the strip d over the contact c' to bring a fresh surface over the same may be effected by simply rotating the stud e^6 through the intermediary of the thumb-piece e^7 , and in order to relieve the friction of the strip d in passing over the contact I preferably provide such contact with a rotatable sleeve c^3 , which is or may be held thereon by a screw c^4 and washer c^5 . While thus the non-conducting strip d rests upon the contact c' , a second contact f rests upon the strip d substantially opposite the contact c' . This contact f may be constructed in various forms and may be pivoted in the cover B or other convenient part of the housing and rest by its own gravity upon the strip d , if desired. I prefer, however, to construct it in

the form of a spring and to support it in a binding-post f' , which is fixedly secured in the cover B or other convenient part of the housing by a screw f^3 and has connected with it an electric conductor f^4 , which extends outward through the cover or other convenient part of the housing for connection with the other of the conductors that lead to the lamp C—as, for instance, the conductor D'. It will thus be seen that the operative parts of the device are all contained within the chamber or recess A, and in order to seal this chamber or recess and prevent moisture from entering the same all the holes and apertures communicating with its interior is or may be closed with wax or other water-repellent material, if so desired.

With the shunting device constructed as above described it may be employed in connection with either arc or incandescent lamps that are disposed in series and may be arranged between the conductors of each lamp, as shown in Figs. 1 and 6, or across the circuit between any two lamps, as shown, for instance, in the aforementioned Letters Patent. When employed in connection with each of the lamps of the series, it may be situate at any convenient point with reference thereto—as, for instance, upon the horizontal arm E, when that form of support is employed for suspending the lamp from the main conductor-supporting pole F—either near the pivot of the supporting-arm or elsewhere thereon, with its conductors c^2 and f^4 connected with the respective conductors D and D', leading to and from the lamp. When employed intermediate any two lamps of a circuit, it may be located at any convenient position with relation thereto, with one of its conductors—as, for instance, c^2 —connected with the main conductor at one of the required points and the other of its conductors—as, for instance, f^4 —at the other.

With the device employed in connection with each of the lamps of a series and the several lamps in operation then of course the shunting devices are all inoperative. On the contrary, when the filament or carbon of one of the lamps breaks or becomes inoperative—as, for instance, that at the right in Fig. 6—then a hole will be burned in the strip d of the device, forming an electric connection between the contacts f^4 and c' , thereby cutting out that lamp and establishing a circuit through the shunting device to the other lamp or lamps of the series—as, for instance, that shown at the left in Fig. 6—and causing the same to glow as it or they did before the filament or carbon of the lamp at the right was broken or rendered inoperative. The same is likewise true when the device is employed intermediate any two of the lamps of the series, and the device will remain inoperative so long as all of the lamps in the circuit are in operation; but the moment that the filament or carbon of any one of the lamps or the main conductor of the circuit outside and

beyond the points connected with the shunting device breaks or otherwise becomes inoperative then a hole is burned through the strip *d* and an electric connection formed between the contacts *f* and *c'*, cutting out all the lamps and the circuit outside and beyond the shunting device and establishing a circuit through the others, all as is well understood.

From the foregoing it will be seen that I produce a shunting device which is not only cheap in construction and automatic in its operation, but one which may be located in any required position in or out of doors without the employment of other means for inclosing it and protecting its operative parts from the weather or otherwise.

While in the foregoing I have described what I consider the best embodiment of my invention, I wish it distinctly understood that I do not limit myself to the exact construction shown, as it is obvious that various modifications may be made in its details without departing from the spirit of the invention.

Having described my invention and specified one of the various forms in which it may be embodied, I claim and desire to secure by Letters Patent of the United States—

1. The combination, with a housing constructed of non-conducting material and provided with a chamber or recess for reception of the operative parts of the device, a cover for closing such chamber or recess, and means by which the cover may be held in proper relationship to that chamber or recess to close the same, of two coöperating electric contacts supported within said chamber or recess, an electric conductor leading from each of these contacts outward from said chamber or recess to the outside of the device, a non-conducting strip interposed between the contacts, spools upon which the opposite ends of this non-conducting strip are respectively coiled, studs upon which these spools are supported within the chamber or recess with one of such studs extending outward to the outside of the device and provided with means at its outer end by which it may be rotated to move the non-conducting strip between the contacts, and means for applying tension to said strip, whereby such housings serve not

only to support the operative parts of the device, but also as an inclosing means therefor to protect them from the moisture and weather, substantially as described.

2. The combination, with the body portion of the housing provided with means whereby it may be firmly secured in place, and with a chamber or recess that is constructed with an enlarged recess at its mouth or open end, a cover constructed of a non-conducting material and adapted to enter and fit the enlarged recess in such body portion, and devices for holding it in that position, of two electric contacts supported upon the back of such cover, an electric conductor leading from each of the contacts through such cover to the outside of the same, a non-conducting strip interposed between the contacts, spools upon which the ends of this non-conducting strip are coiled, and studs upon which these spools are supported from the cover within the chamber or recess of the body portion, with one of such studs extending through such cover and provided with means at its outer end whereby it may be rotated, substantially as described.

3. The combination, with the cover constructed of material that is a non-conductor of electricity, two electric contacts secured to its back, an electric conductor leading from each of these contacts through the cover to the outside thereof, and a strip of non-conducting material interposed between such contacts, of spools upon which the opposite ends of said strip may be coiled, and studs upon which these spools are mounted likewise secured to the back of such cover, one of which studs is provided with a device by means of which tension may be applied to its spool, and the other of which extends through said cover and is equipped at one of its ends with means whereby it may engage with a notch in its spool and at its other end with means whereby it may be rotated, substantially as described.

In testimony whereof I have hereunto set my hand this 20th day of March, 1902.

EDWARD R. CLIFF.

Witnesses:

WM. H. APPLETON,
W. C. HAUFF.