

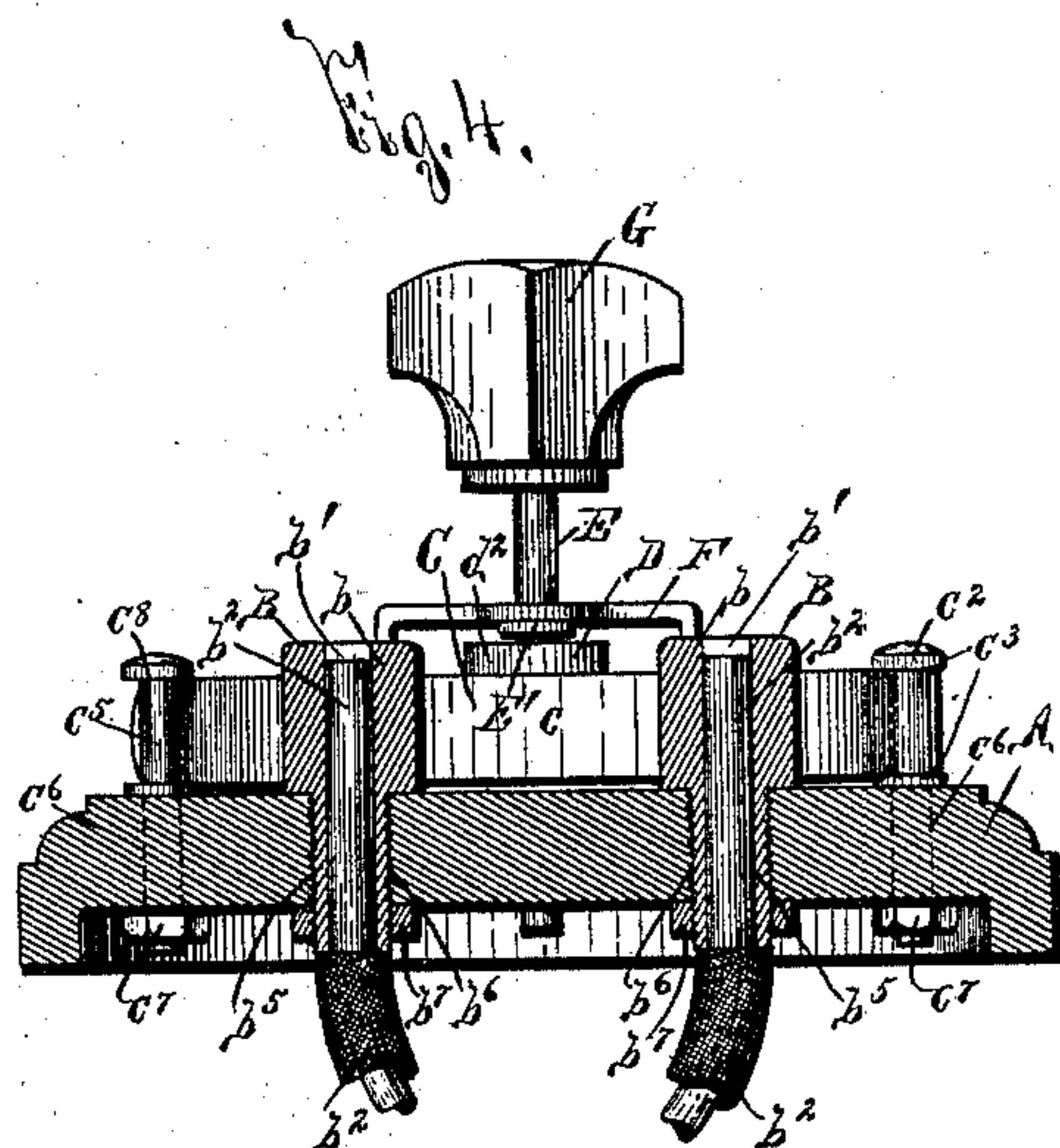
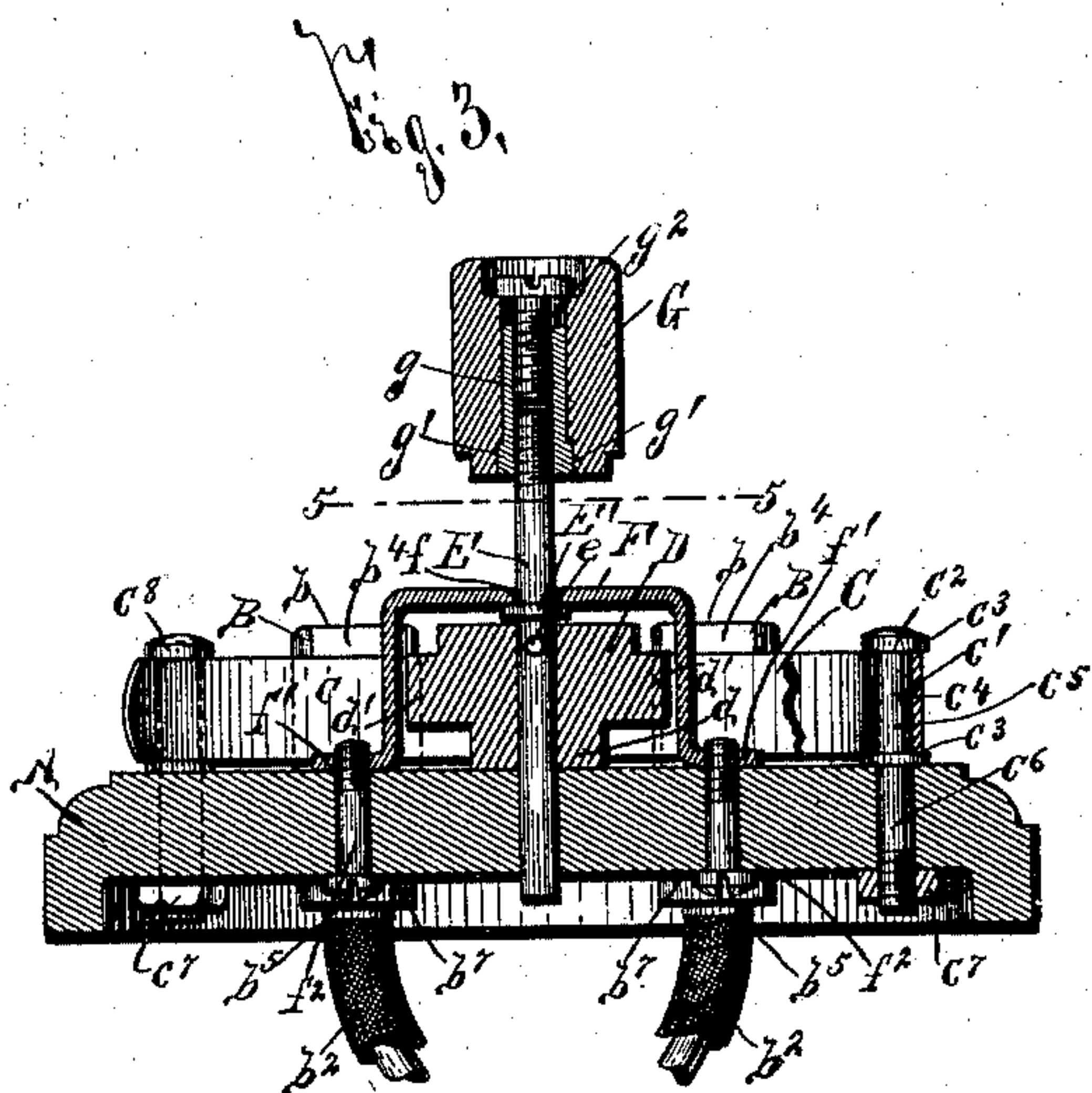
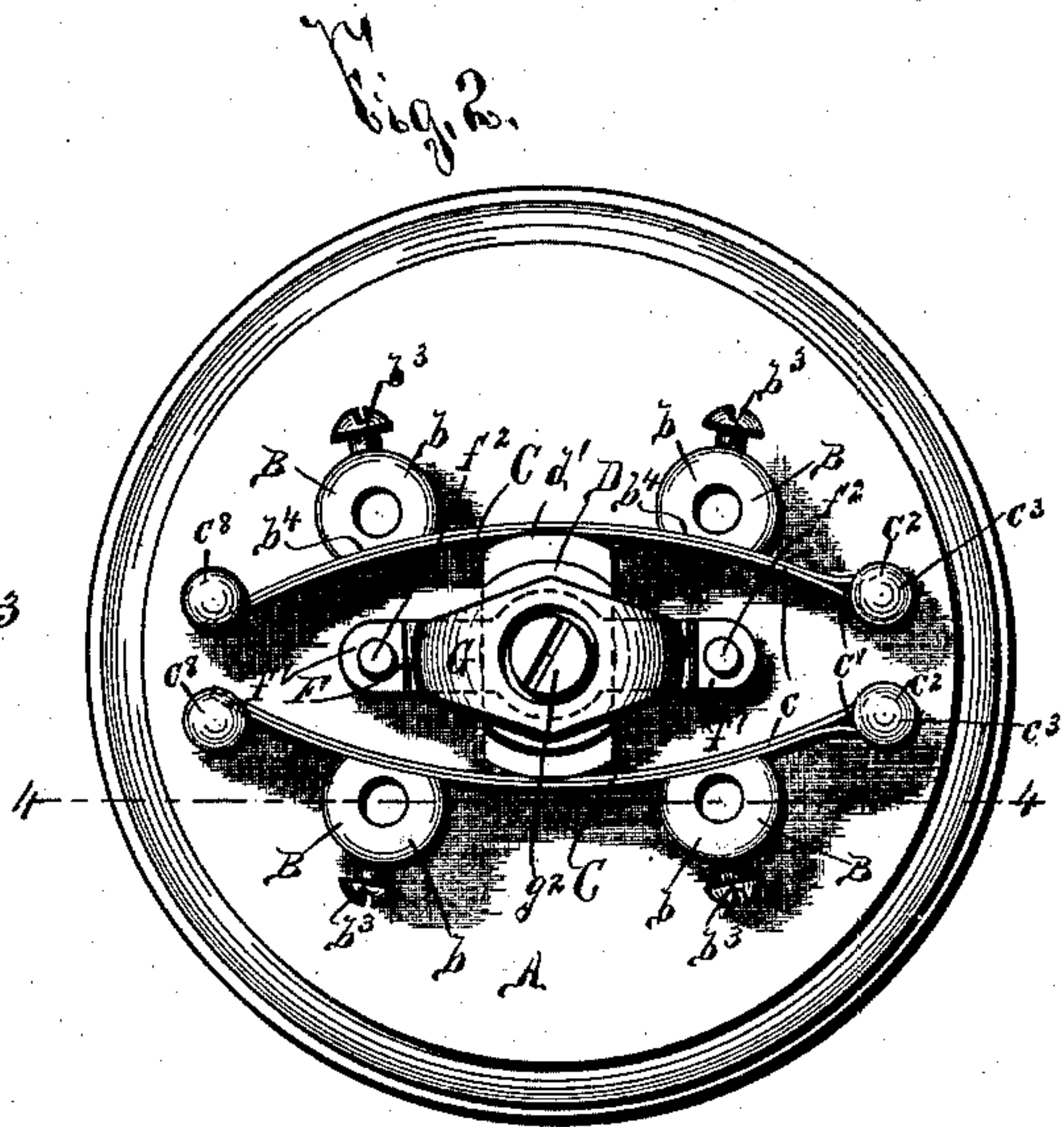
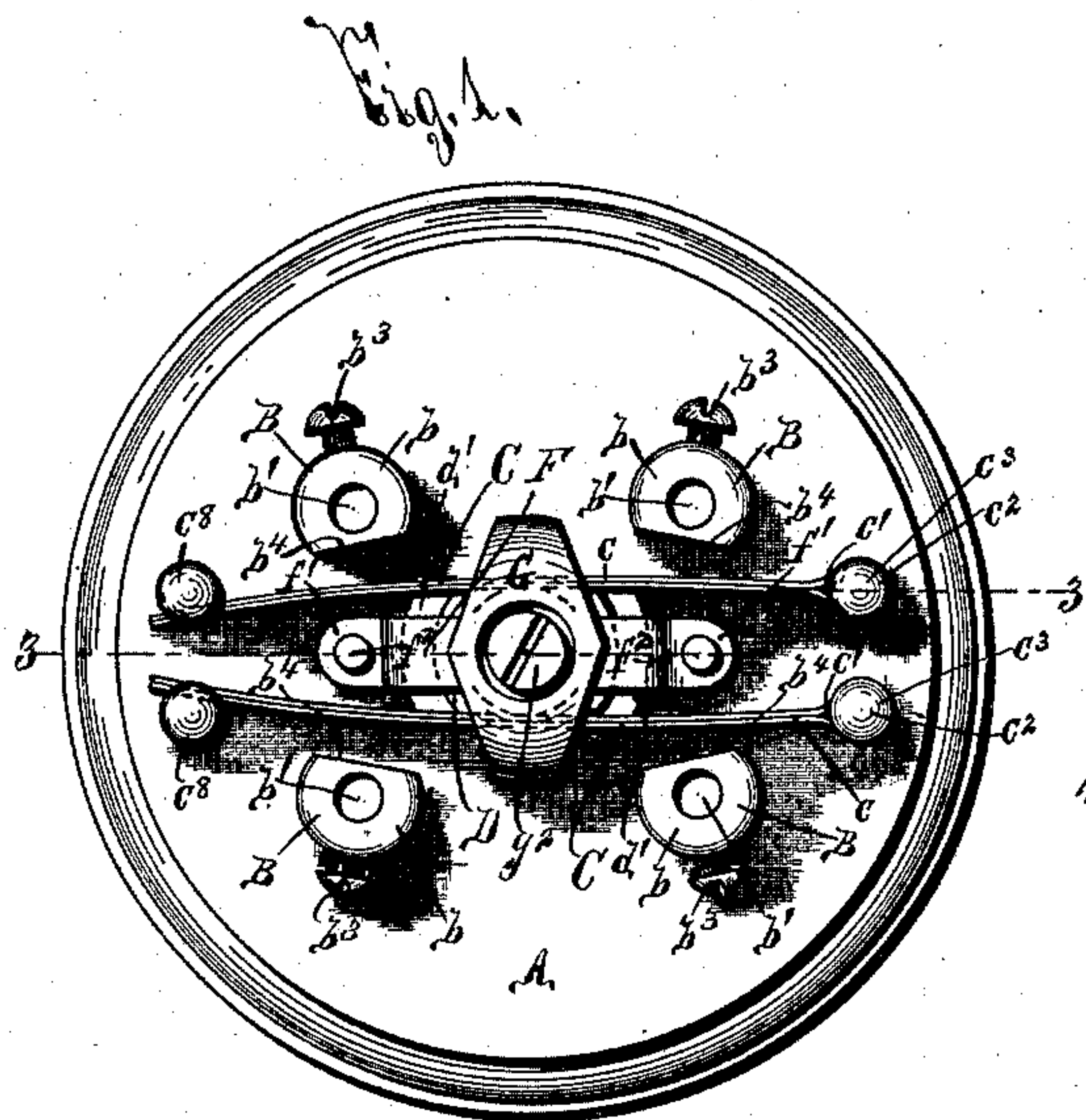
(No Model.)

2 Sheets—Sheet 1.

E. A. SNOW.
ELECTRIC SWITCH.

No. 477,612.

Patented June 21, 1892.



WITNESSES:

H. E. Chase,
W. H. Randall,

INVENTOR

Eugene A. Snow

BY

Henry Wilkinson & Parnass
ATTORNEYS.

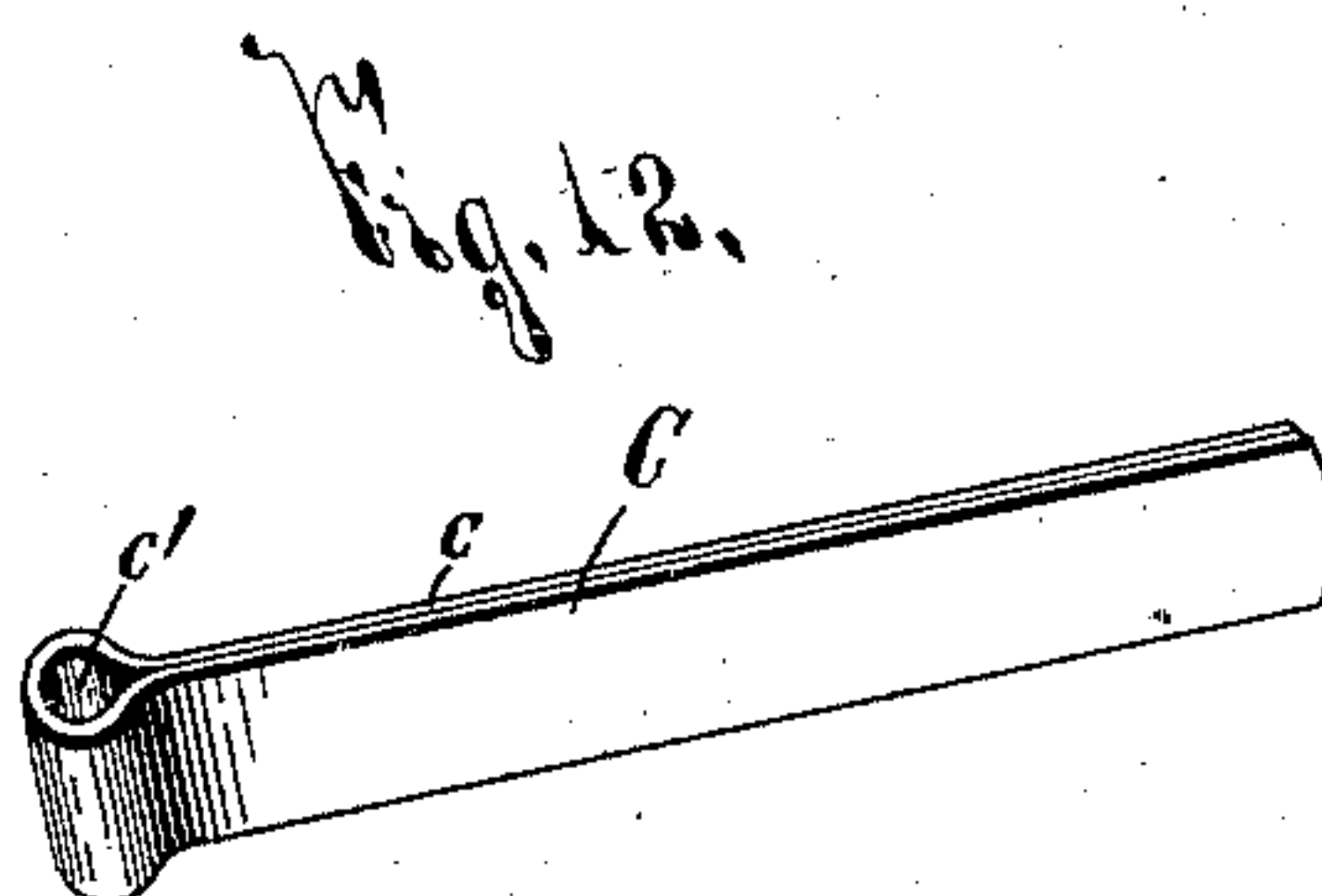
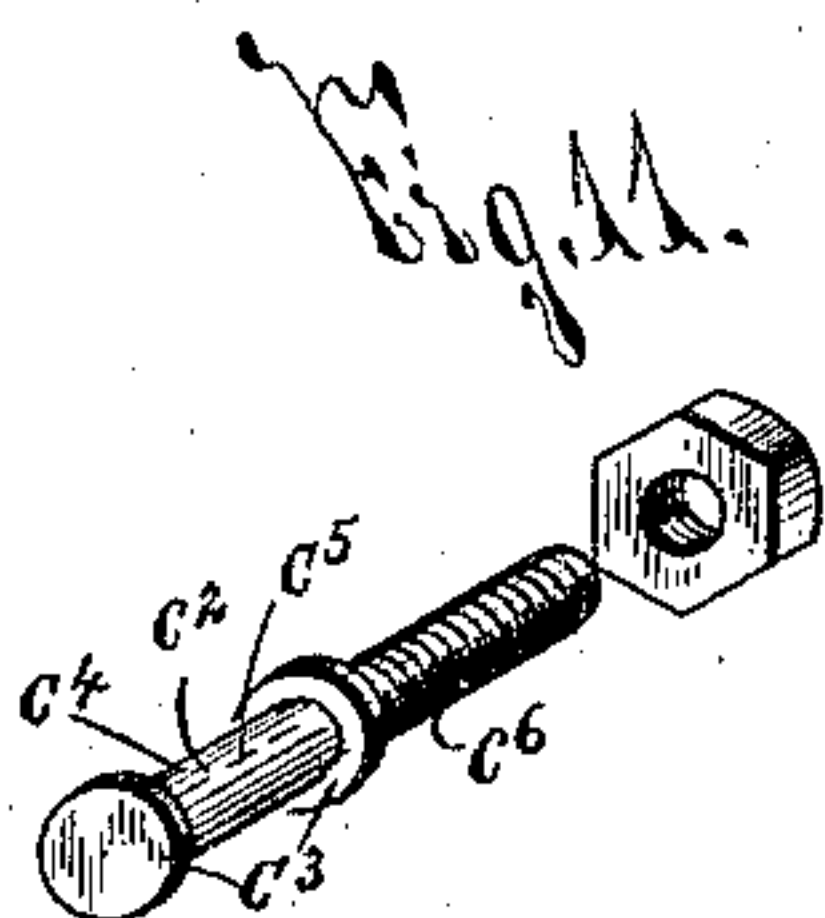
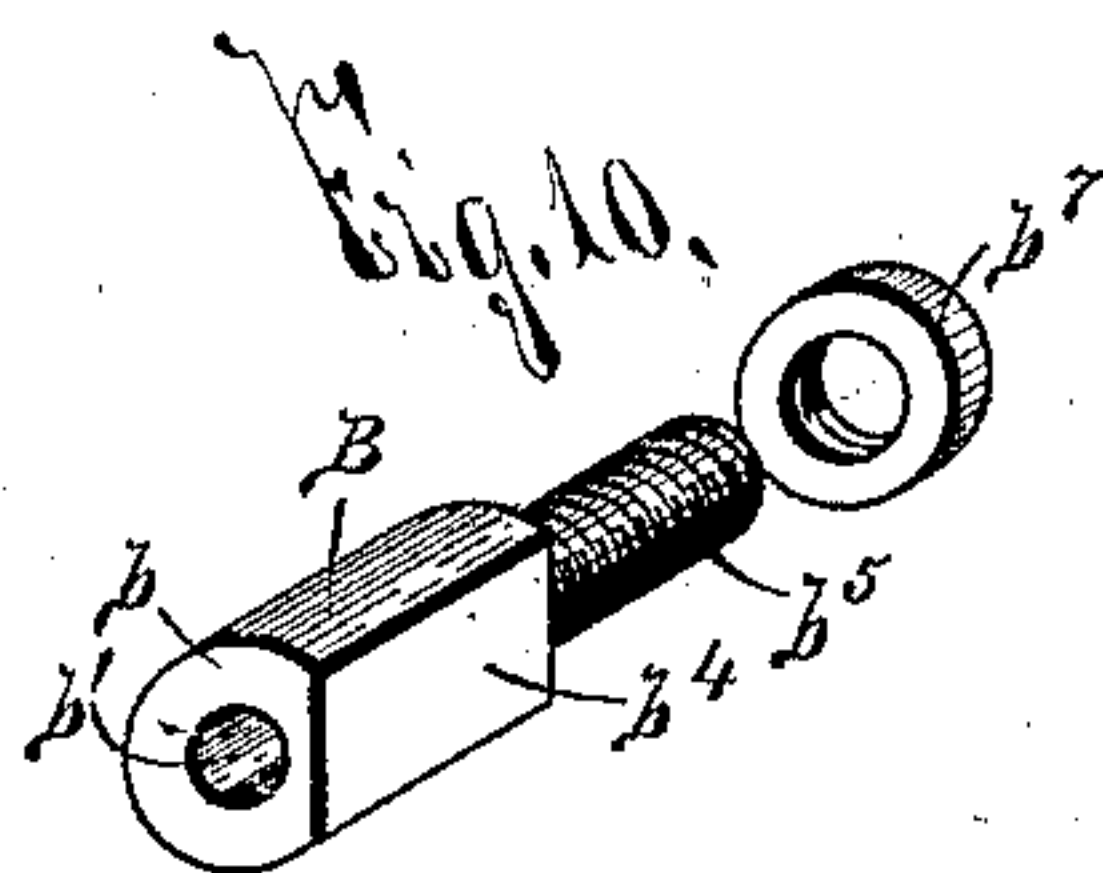
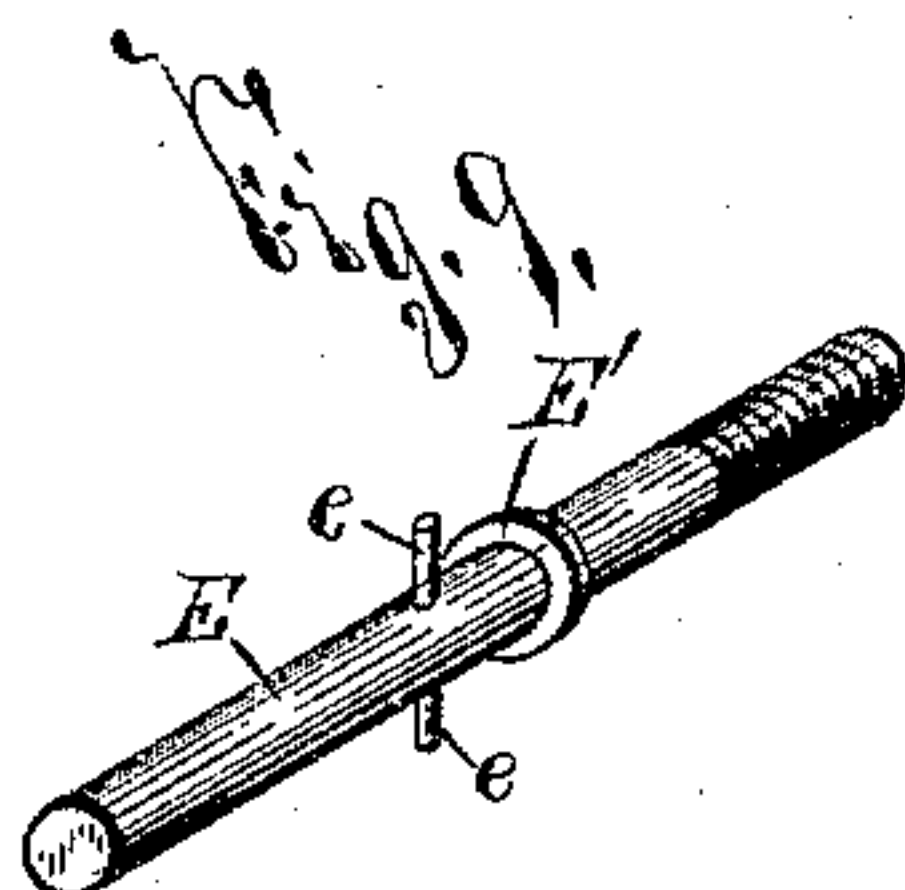
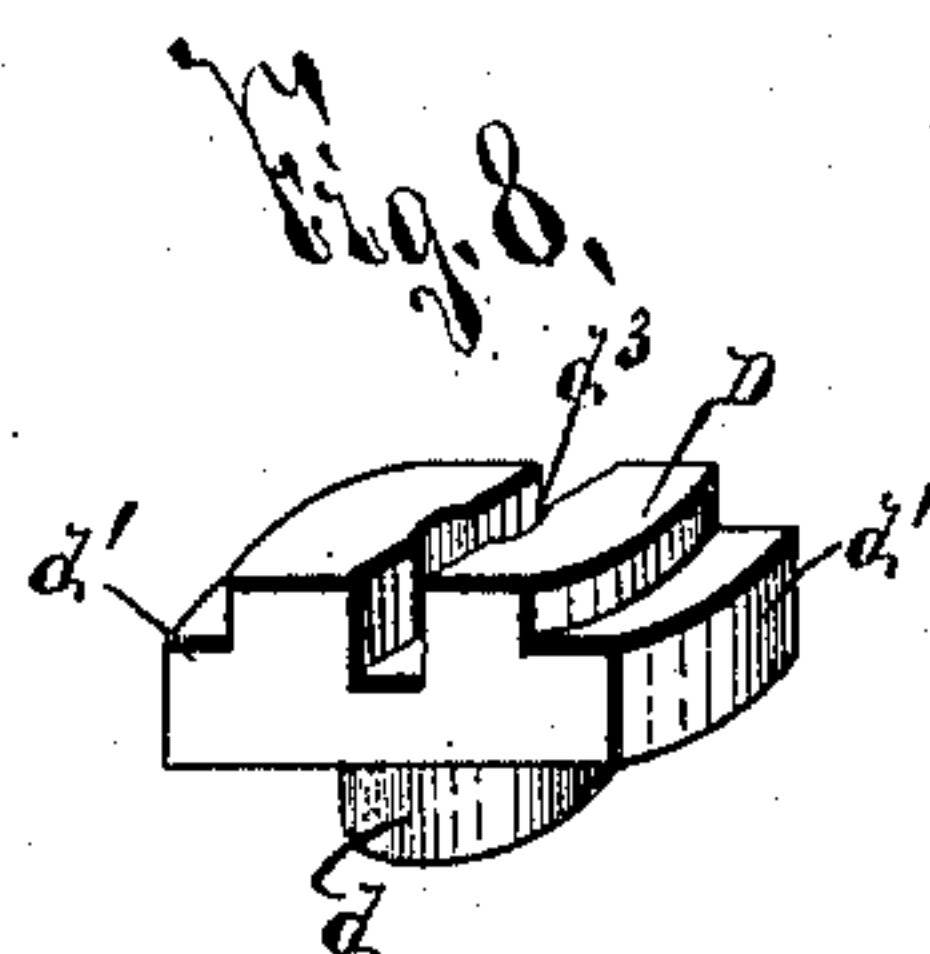
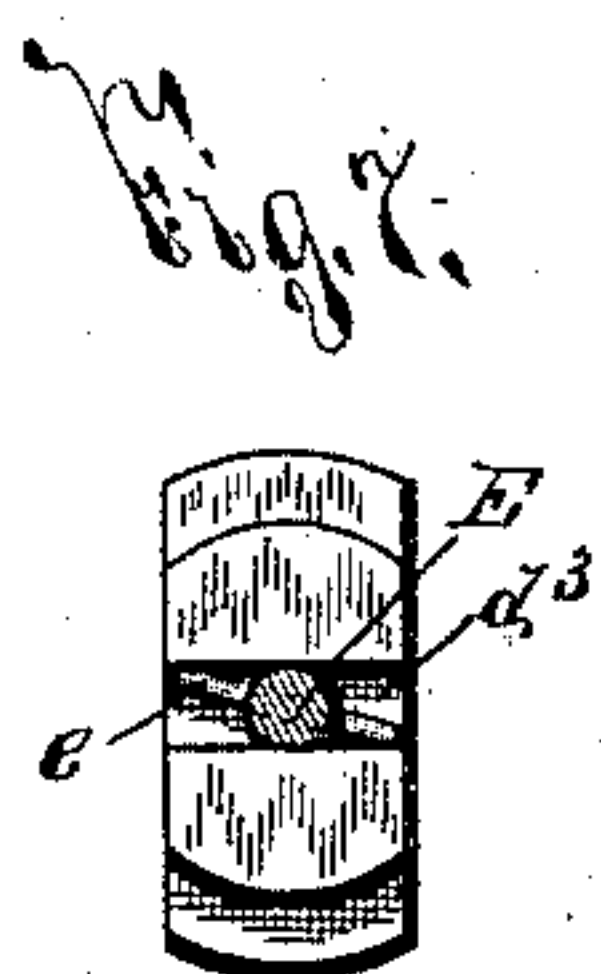
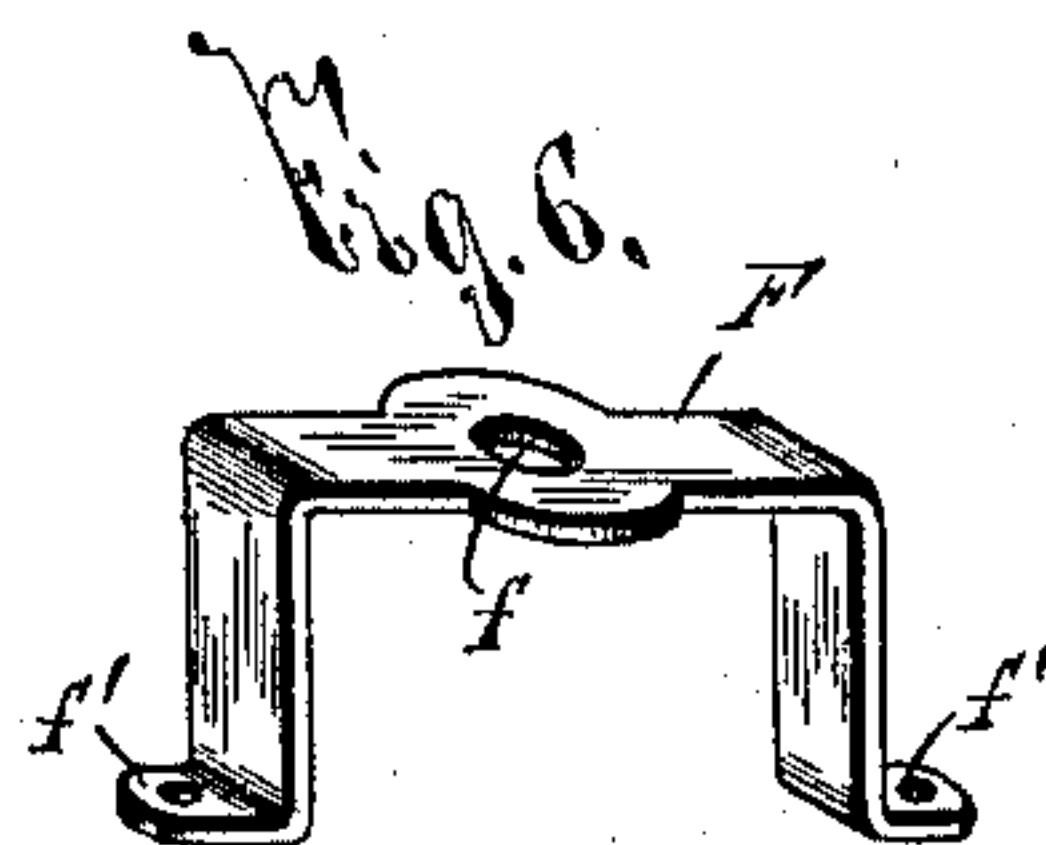
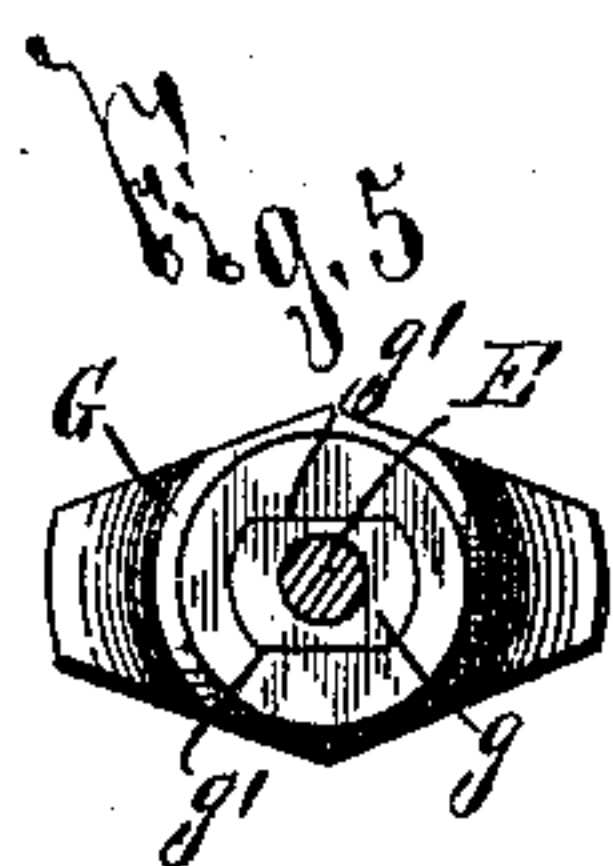
(No Model.)

2 Sheets—Sheet 2.

E. A. SNOW.
ELECTRIC SWITCH.

No. 477,612.

Patented June 21, 1892.



WITNESSES:

W. H. Randall,
H. C. Chase,

INVENTOR

Eugene A. Snow

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UNITED STATES PATENT OFFICE.

EUGENE A. SNOW, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE ELECTRIC ENGINEERING AND SUPPLY COMPANY, OF SAME PLACE.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 477,612, dated June 21, 1892.

Application filed July 23, 1891. Serial No. 400,509. (No model.)

To all whom it may concern:

Be it known that I, EUGENE A. SNOW, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Electric Switches, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in electric switches, and has for its object the production of a simple and effective device which is durable and efficient in operation and economical in manufacture.

To this end it consists, essentially, in a pair of terminals, a spring composed of a spring-plate folded upon itself, supports for the opposite extremities of the spring, and a cam for engaging the central portion of said spring and forcing the same into contact with the terminals, one extremity of the spring being adapted to slide along its support.

The invention furthermore consists in the detail construction and arrangement of the parts, all as hereinafter more particularly described, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the views.

Figures 1 and 2 are top plan views of my improved invention, representing the circuit as broken at Fig. 1 and open at Fig. 2. Fig. 3 is a vertical sectional view taken on line 3 3, Fig. 1. Fig. 4 is a similar sectional view taken on line 4 4, Fig. 2. Fig. 5 is a horizontal sectional view taken on line 5 5, Fig. 3. Fig. 6 is an isometric perspective of the bracket for holding the cam-spindle in position. Fig. 7 is a top plan view of the cam, its actuating-spindle being shown in section. Figs. 8 and 9 are respectively isometric views of the detached cam and its spindle. Fig. 10 is an isometric perspective of one of the terminals and the nut for holding the same in position. Fig. 11 is an isometric perspective of one of the spring-supports and the nut for holding it in position, and Fig. 12 is an isometric perspective of one of the springs.

A represents the base-plate, composed of porcelain or other suitable non-conducting

material and formed of any desirable shape or size.

BB represent a pair of oppositely-arranged terminals of a broken circuit, C the spring adapted to be engaged with said terminals for closing the circuit, and D the cam for forcing the spring into such engagement. As preferably constructed, the terminals (best seen at Figs. 1, 2, 4, and 10) consist of a cylindrical sleeve *b*, having a central cavity *b'*, in which the wire *b²* is suitably secured, as by a screw *b³*, and provided with a comparatively large and substantially flat or slightly-curved contact-shoulder *b⁴*, adapted to be engaged by the spring C and possess sufficient surface to prevent burning of the parts.

The terminals BB are formed with a screw-threaded shank *b⁵*, screwing in an opening *b⁶* in the base-plate A, and adapted to be rigidly held in position by a suitable nut *b⁷*, (here shown as round in cross-section,) although it is evident that it may be otherwise formed at will.

The spring C, (best seen at Figs. 1, 2, 3, 4, and 12,) consists, preferably, of a spring-plate *c*, folded upon itself, with its extremities adapted to lie in close contact, in order that both may yield together, and thus afford a great degree of strength and durability. The spring is formed with an eye *c'*, mounted on a suitable support *c²*, having shoulders *c³* above and below the spring and an annular recess *c⁴* for receiving the eye *c'*. The support *c²* is provided with a shank *c⁶*, adapted to pass through the porcelain base A, its end being screw-threaded for receiving a clamping-bolt *c⁷*. The spring-eye *c'* is formed, preferably, by applying pressure to the opposite extremity of the spring in close proximity to the support *c²*, thus forming said eye and lapping both extremities of the spring upon each other by one or more operations of suitably-arranged dies, as will be evident by any one skilled in the art. By thus mounting the spring upon the support *c²* it is evident that the same is not detachable unless the opposite extremities of the spring are forcibly separated a sufficient distance to permit the passage of the portion *c⁵* of said support of less diameter than the shoulder *c³*. The opposite extremity of the spring C rests against a sup-

port c^8 of similar construction to the one c^2 , and when the spring is forced outward and afterward springs back to its normal position the free end of the spring slides along the rounding face of the portion c^5 of said support engaged with the said spring.

The cam D (best seen at Figs. 1, 2, 3, 4, 7, and 8) is composed of vulcanized fiber or other suitable non-conducting material, is formed with a hub d , adapted to rest upon the top face of the base A, with oppositely-arranged cam-teeth d' , and with a top projection d^2 , having a transverse slot d^3 . Mounted in the slot d^3 is a pin or lug e , projecting, preferably, at both extremities from the spindle E for operating the cam D. The pin e being of much less diameter than the slot d^3 , it is evident that the cam and its spindle are connected together with a lost motion, in order that the separation of the spring C from the terminals B B may be sufficiently rapid to prevent burning of the parts.

Above the cam D of the spindle E is a shoulder E' , and above said shoulder is the U-shaped bracket F, Figs. 1, 2, 3, 4, and 6, formed at its central portion with an opening f for receiving the spindle and at its opposite extremities with feet f' , adapted to be secured to the base A by screws f^2 . It will thus be understood that the shoulder E' , between the top face of the cam D and the adjacent face of the bracket F, prevents the spindle from up-and-down movement, and thereby securely supports the same in operative position. The upper extremity of the spindle E is screw-threaded, and suitably secured thereto is the handle G, formed, preferably, of porcelain, although it may also be formed of other non-conducting materials.

As shown, described, and claimed in the application of even date herewith of Jesse L. Hines, the handle G is provided with a sleeve g , screwing upon the end of the spindle E and formed with shoulders g' , engaged with corresponding shoulders of the handle and adapted to be held in operative position by a screw g^2 .

Although only one pair of terminals B B, a single spring C, and its supports c' and c^8 have been described, the illustrated switch is what is termed a "double switch," by means of which two currents are opened and closed at the same time, and it will be understood that I use two oppositely-arranged springs C C, mount the cam D between them, and thereby engage each spring with a pair of terminals B B.

The operation of my invention will be readily perceived from the foregoing description and upon reference to the drawings. It will be particularly noted that the parts are very simple, easily formed and assembled at a minimum cost, and that the action is strong and positive, and the parts durable and effective in operation.

The detail construction and arrangement of the parts of my invention may be somewhat varied from that shown and described with-

out departing from its spirit. Hence I do not limit myself to such precise detail construction.

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

1. In an electric switch, the combination, with a pair of terminals, of a pair of supports, a spring supported at its opposite extremities by said supports, and a cam for engaging the spring with the terminals, said cam being adapted to engage the central portion of the spring, substantially as set forth.

2. In an electric switch, the combination, with a pair of terminals, of a spring, supports arranged on opposite sides of the terminals for supporting the opposite extremities of the spring, and a cam for engaging the spring with the terminals, said cam being adapted to engage the spring at a point interposed between the terminals, substantially as specified.

3. In an electric switch, the combination, with a terminal, of a support, a spring composed of a spring-plate folded upon itself and arranged with its ends adapted to lie one against the other and formed with an eye adapted to be mounted on said support, and a cam for engaging said spring with the terminal, substantially as set forth.

4. In an electric switch, the combination, with two pairs of terminals, of a pair of springs mounted between the terminals, each spring being composed of a plate folded upon itself, supports for the opposite extremities of the springs, and a cam for engaging the central portion of said springs and forcing them into contact with the terminals, substantially as and for the purpose set forth.

5. In an electric switch, the combination, with a pair of supports, of separate springs, each composed of a spring-plate folded upon itself and arranged with its ends adapted to lie one against the other, formed with an eye adapted to be mounted on the adjacent support, terminals in proximity to the springs, and a cam for engaging the springs with the terminals, substantially as specified.

6. In an electric switch, the combination, with a pair of terminals, of a pair of supports, a spring supported at its opposite extremities by said supports, a cam for engaging said spring with the terminals, said cam being adapted to engage the central portion of the spring, and a handle connected by a lost motion with said cam, substantially as and for the purpose specified.

7. In an electric switch, the combination, with a pair of springs, each composed of a spring-plate folded upon itself and arranged with its ends adapted to lie closely one against the other for increasing the resiliency of the spring, of a pair of supports at the opposite extremities of said spring, a cam for forcing said springs outward, two pairs of terminals arranged on opposite sides of the pivot-point of said cam and adapted to be engaged by the springs when forced in their outward position,

and a handle connected by a lost motion with said cam, substantially as and for the purpose set forth.

5 8. In an electric switch, the combination, with a spring, of a support for one extremity of the spring and a second support having an engaging face along which the opposite extremity of said spring slides, a cam for forcing the spring outward, and terminals adapted
10 to be engaged by said spring, substantially as set forth.

9. In an electric switch, the combination of a pair of supports, a spring consisting of a spring-plate folded upon itself and formed at
15 one extremity with an eye mounted at one support and having its opposite extremity adapted to slide along the opposite support, a pair of terminals, and a cam for engaging said spring with the terminal, substantially as de-
20 scribed.

10. In an electric switch, the combination of a cam, two pairs of terminals on opposite sides of the center of said cam, formed with a substantially-flat engaging face, a pair of
25 springs extending beyond the terminals, and supports for the opposite extremities of the springs, substantially as specified.

11. The combination, with a terminal and a cam, of the herein-described spring for elec-
30 tric switches, the same consisting of a support and a spring-plate folded upon itself and

formed at its central portion with an eye for receiving said support, substantially as described.

12. The combination, with a terminal and a 35 cam, of the herein-described spring for electric switches, the same consisting of a support having a pair of oppositely-arranged shoulders, and a spring-plate having its opposite extremities folded upon itself and provided 40 with an eye interposed between the shoulders of the support for securing the spring to said support, substantially as set forth.

13. In an electric switch, the combination of a cam, a porcelain handle connected by a 45 lost motion with the cam, folded springs on opposite sides of the cam, supports having oppositely-arranged shoulders, and an annular recess for receiving the opposite extremities of the spring, and oppositely-arranged 50 terminals consisting of a sleeve having a screw-threaded shank, and a nut movable on said shank, substantially as described.

In testimony whereof I have hereunto signed my name, in the presence of two attesting wit- 55 nesses, at Syracuse, in the county of Onondaga, in the State of New York, this 19th day of June, 1891.

EUGENE A. SNOW.

Witnesses:

CLARK H. NORTON,
L. M. BAXTER.