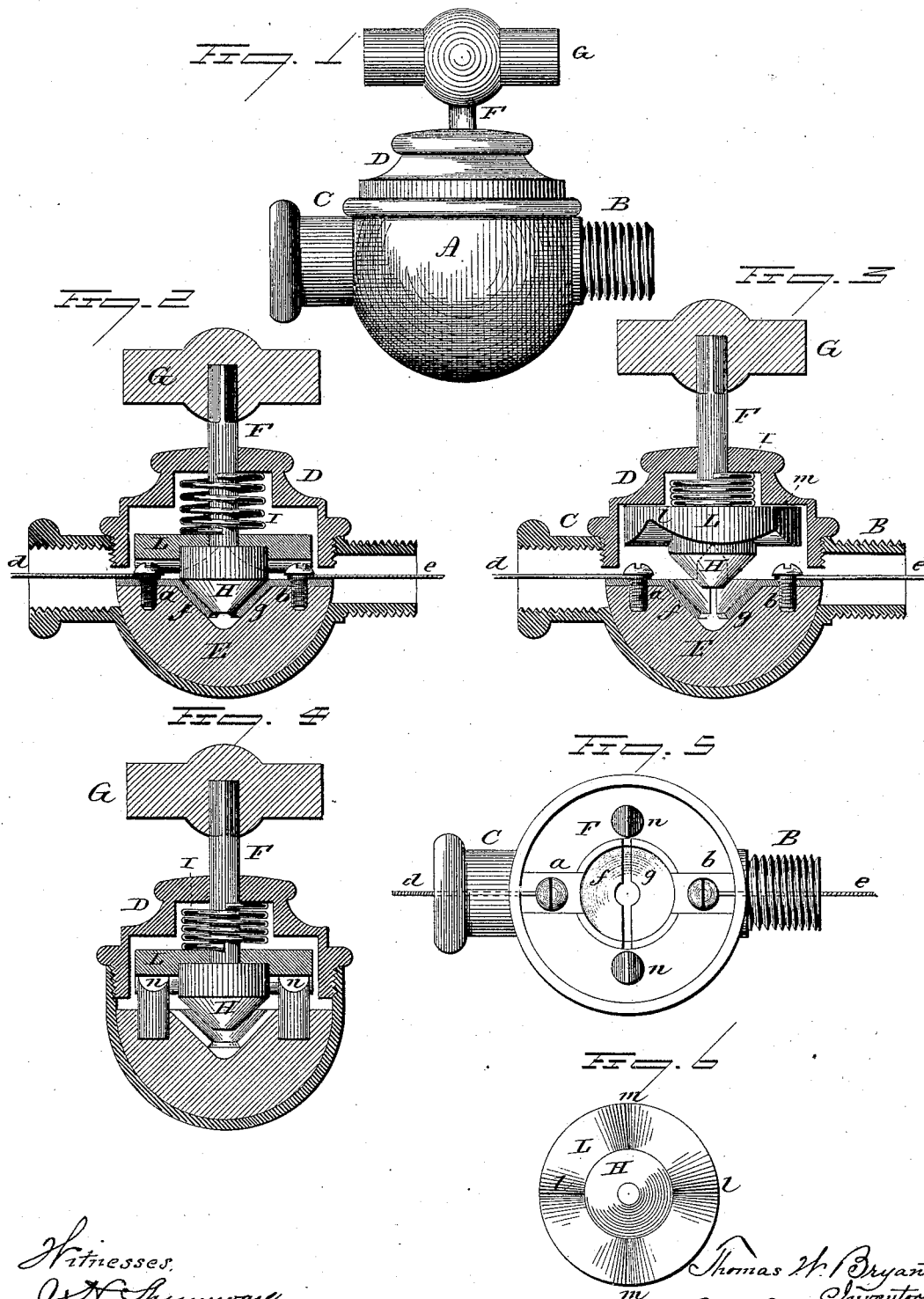


(No Model.)

T. W. BRYANT.
ELECTRICAL CIRCUIT CLOSER.

No. 305,045.

Patented Sept. 16, 1884.



Witnesses:
W. H. Shumway
John C. Earle

Thomas W. Bryant
Inventor
By Atty.
John C. Earle

UNITED STATES PATENT OFFICE.

THOMAS W. BRYANT, OF ANSONIA, CONNECTICUT.

ELECTRICAL CIRCUIT-CLOSER.

SPECIFICATION forming part of Letters Patent No. 305,045, dated September 16, 1884.

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To all whom it may concern:

Be it known that I, THOMAS W. BRYANT, of Ansonia, in the county of New Haven and State of Connecticut, have invented a new Improvement in Electric Switches; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the switch; Fig. 2, a longitudinal central section of the same, showing the circuit closed; Fig. 3, a longitudinal central section showing the plug raised to its extreme position in breaking the circuit; Fig. 4, a transverse central section at right angles to Fig. 2, showing the plug as located in the position of open circuit; Fig. 5, a top view, the plug and cap removed, showing the bed, the wires connected to the contacts and the bearings upon which the cam works; Fig. 6, the working-face of the cam.

This invention relates to an improvement in the switch for breaking and closing the circuit on a single line, specially adapted to incandescent lighting, the object of the invention being a simple device, whereby in breaking the circuit the arc may be made so great as to insure a positive and complete breaking of the circuit, and the switch locked in either the closed or broken position, and so as to be operated in similar manner as a gas-cock; and the invention consists in the construction as hereinafter described, and more particularly recited in the claims.

A represents a shell from which is a projection, B, at one end and C at the other end, similar to a gas-cock—one end threaded female screw and the other male screw. Upon the top of the shell a cap, D, is screwed to close the chamber within the shell. Within the shell is an insulating bed, E, of hard rubber or similar material. On the top of this bed are two metal plates, *a b*. These are secured upon the insulating material, and to these, respectively, the wires *d e* are attached, as shown, these wires coming through the tubular extensions B C on the shell. In the center of the bed is an inverted conical-shaped recess,

into which a projection, *f*, from the plate A extends, and a like projection, *g*, from the plate B, these two projections being of corresponding inverted conical shape, as seen in Figs. 2, 3, 4, and 5, the edges of the projections *f g* stopping short of the center, so as to leave a space, *i*, between them to break metallic connection between the two wires *d e*. These projections *f g* form contacts for closing and breaking the circuit.

Through the cap D is a spindle, F, provided with a handle, G, by which the spindle may be readily turned. This spindle extends into the shell, as seen in Fig. 2, and carries at its lower end a metallic cone-shaped plug, H, its conical shape corresponding to that of the surface of the two contacts *f g*, and so that it may set upon those contacts, as seen in Fig. 2, and thereby make metallic connection between the two and close the circuit through the wires *d e*. The spring I is arranged around the spindle, the action of which is to force the plug H onto the contacts *f g* to make the metallic connection, as before described. Upon the spindle is a disk, L, of non-conducting material, such as hard rubber. It is fixed to the spindle, so as to move up and down with it. The under face of this disk is made of cam shape, as seen in Figs. 3 and 6, there being two depressions, *l l*, diametrically opposite each other, and of equal depth, and two other depressions, *m*, diametrically opposite each other between the depressions *l*, but the depressions *m* somewhat less than the depth of the depressions *l*. The surface of the cam between the depressions is curved, to make the passage into and from the depressions easy.

At diametrically-opposite points on the bed are two studs, *n n*. These studs project upward toward the cam L, and so that the under face of the cam will ride on the ends of the studs, as seen in Fig. 4.

As represented in Fig. 2, the plug H and the cam L are in their extreme down or contact position, the deeper depressions, *l*, standing over the studs *n*, as seen in broken lines, Fig. 2. Now, if the cam L be turned, the surface of the cam riding upon the studs will cause it to rise as the depressions pass from over the studs into the extreme up position, as seen in Fig. 100

3, where the stud is indicated in broken lines, and the highest point of the cam standing thereon. In this position the plug is raised to its greatest distance from the contacts *f g*, and so far as to positively break the circuit. Continuing the rotation of the cam *L*, the depressions *m* will pass onto the studs *n*, as seen in Fig. 4, leaving the plug slightly raised above the contacts *f g*. The circuit then being in the broken condition, the plug is substantially locked by the studs and depressions in the cam. When it is desired to close the circuit, the cam is returned to bring the deeper depressions *l* over the studs *n*. Then the plug will drop onto the contacts *f g* and close the circuit.

The handle *G* of the plug may stand in line with the projections *B C* of the shell in its closed position, as seen in Fig. 2. Then when turned at right angles thereto, as seen in Fig. 4, the circuit will be broken. Thus the handle *G* will be an indicator, showing whether the circuit is closed or broken, as may be the handle of a cock in a water or gas pipe, and because of the cam dropping onto the studs at their respective depressions the operator will know when his switch is locked in either position. The rise of the plug, due to the cam shape of the disk *L*, positively insures the breaking of the circuit.

The depressions *m* may be omitted, leaving the under face of the cam plain except toward the depressions *l*; but in that case the locking of the switch in the open position would not be attained.

I claim—

1. The combination of the shell *A*, constructed with openings, into which the lines *d e* may enter, the insulated bed *E* in said shell, contacts *f g* on said bed, each in connection with its respective line, the plug *H*, arranged for ro-

tation, and also for vertical movement toward and from the bed, a spindle extending from said plug through the shell as a means for rotating the plug, a cam, *L*, fixed to said plug and spindle, the under face of said cam provided with depressions *l* and other depressions, *m*, of less extent than the depressions *l*, and fixed studs or bearings, upon which said cam will travel in its rotation, and whereby said plug may drop onto or be raised from said contacts to close or break the circuit, substantially as described.

2. The combination of the shell *A*, the insulating-bed *E*, contacts *f g*, in connection with the respective lines, the plug *H*, arranged in the shell for rotative and vertical movement, a spindle extending from said plug through the shell, a cam fixed to said spindle and plug, its under face constructed with depressions *l*, and studs or bearings below, upon which the surface of the cam may travel to raise the plug from the contacts or permit it to fall thereon to break or close the circuit, substantially as described.

3. The combination of the shell *A*, insulated bed *E*, contacts *f g* thereon, in connection with the respective lines, a plug, *H*, free for vertical and rotative movement, a spindle extending therefrom through the shell, a cam fixed to said spindle and plug, its under face constructed with a recess, whereby in the rotation of said plug and cam the plug will be raised from the contacts or permitted to drop thereon, as the case may be, with the spring *I*, arranged to force said plug toward the contacts, but yield for its removal therefrom, substantially as described.

THOS. W. BRYANT.

Witnesses:

GEO. H. HAWLEY,
CHAS. F. KUCH.