

2 Sheets—Sheet 1.

SWITCH, CIRCUIT BREAKER, &c.

Patented Apr. 17, 1888.

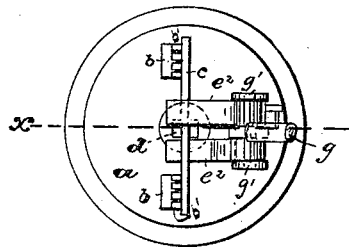


Fig. 1.

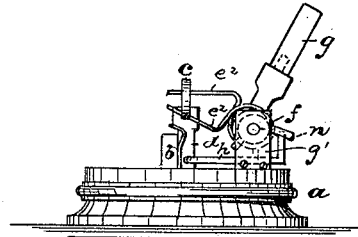


Fig. 2.

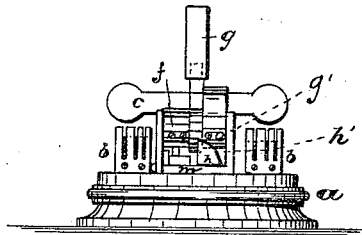


Fig. 3.

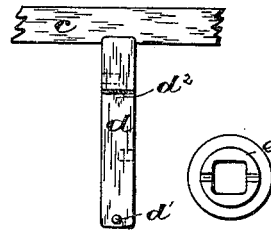


Fig. 4. Fig. 5.

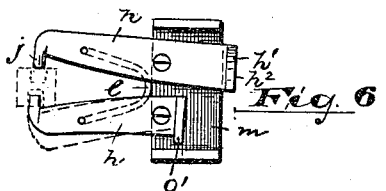


Fig. 6

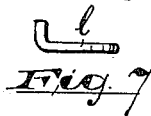


Fig. 7

INVENTOR =

John von der Kammer.

BY Drake & Co. ATT'YS.

(No Model.)

2 Sheets—Sheet 2.

J. VON DER KAMMER.
SWITCH, CIRCUIT BREAKER, &c.

No. 381,446.

Patented Apr. 17, 1888.

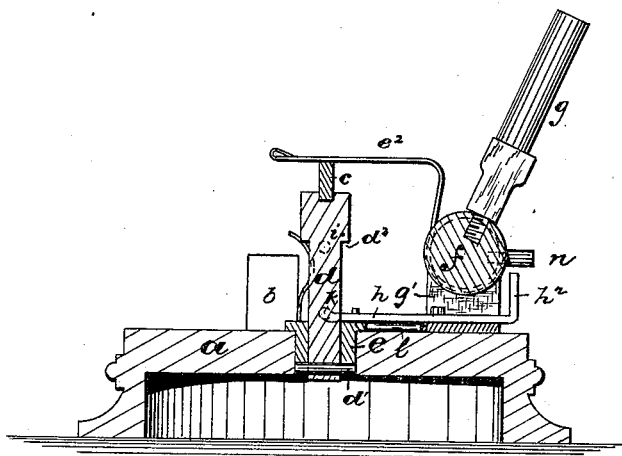


Fig. 8.

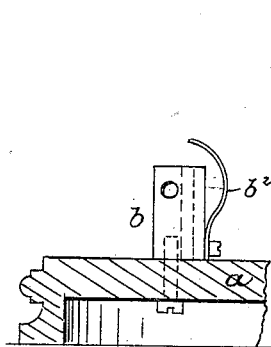


Fig. 11

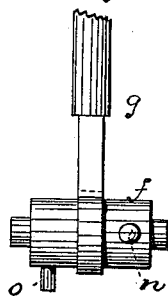


Fig. 9.

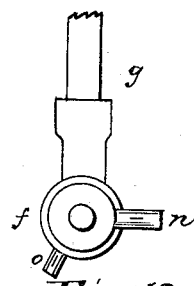


Fig. 10.

WITNESSES:

E. L. Sherman.
C. H. Baldwin.

INVENTOR:

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UNITED STATES PATENT OFFICE.

JOHN VON DER KAMMER, OF NEWARK, NEW JERSEY.

SWITCH, CIRCUIT-BREAKER, &c.

SPECIFICATION forming part of Letters Patent No. 381,446, dated April 17, 1888.

Application filed February 18, 1888. Serial No. 261,504. (No model.)

To all whom it may concern:

Be it known that I, JOHN VON DER KAMMER, a subject of the Emperor of Germany, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Switches, Circuit-Breakers, and Closers or Regulators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to reduce the cost of construction; to secure greater space on the base of the device to allow room for a greater number of terminals of the same construction and size; to reduce the number of parts and movements, thereby reducing the chance for disarrangement and wear, and to avoid the necessity for close-fitting joints, and to secure other advantageous results in manufacture and operation.

The invention consists in the improved circuit maker and breaker and in the arrangement and combination of parts thereof, substantially as will be hereinafter set forth, and finally embodied in the clauses of the claims.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is a plan of the improved device. Fig. 2 is a side elevation, and Fig. 3 is a front view of the same. Figs. 4, 5, 6, and 7 are detail views which will be hereinafter more specifically referred to. Fig. 8 is a section taken on line X of Fig. 1. Figs. 9 and 10 are detail views of a handled head, and Fig. 11 is a detail view of a binding post or terminal.

In said drawings, *a* indicates a base or bed, preferably having a disk-like form, as indicated in Fig. 1, and it may be hollow on the under side to allow for connections.

b b are binding posts or terminals of the circuit-breaker or switch, which may be of any ordinary construction and may be of any suitable number in accordance with the results to be secured. The connecting-surfaces *b'* stand at right angles, or approximately so, to the upper or outer face of the base, so that they will

take up less superficial area thereon, and thus a greater number of such connecting-surfaces may be disposed on a given base and a larger number of series may be cut off or connected at a given operation of the hand-piece of the breaker.

c indicates a connecting-bar adapted to make a contact with two opposite poles or terminals, *b b*, to complete a circuit and to be disconnected from said poles or terminals so as to break said circuit. Said bar *c* has a vertical movement to and from said poles or terminals, so as to connect with said poles or terminals in its downward movement and disconnect therefrom in its upward movement. Said connecting-bar is carried by a post, *d*, which has a bearing in a sleeve, *e*, secured in the base, the said post sliding downward in said sleeve to bring the bar into contact with the poles, or upward to break the contact.

The upward movement may be limited by a stop, *d'*, and the downward movement by a shoulder or stop, *d''*. The said post is preferably angular, and the said sleeve is correspondingly angular, so as to prevent the post from turning in the sleeve, the connecting-bar thereby being properly held in operative relation to the poles or terminals.

The poles or terminals where they engage the connecting-bar are each preferably provided with a brush or a series of springs which are disposed vertically on the studs or binding-posts of the poles, so that as the vertically-moving bar slides against said springs a contact is surely made.

To break and make a circuit, the bar is raised or lowered from the poles by means of spring-arms *e' e''*, which are secured on a pivotal drum or head, *f*, to which a handle, *g*, is secured. Said spring-arms extend from said head *f* and engage the connecting-bar on its upper and lower edges respectively, one of said spring-arms serving to raise said connecting-bar, and the other to lower the same when said connecting-bar, or the standard or post upon which it is secured or formed, is released, as hereinafter described. The drum or head *f* has a vibratory movement in its bearings *g' g''*, and when the said head is moved toward the connecting-bar the spring-arm which bears on the upper side of the said connecting-bar is given increased tension, while in the reverse

movement the spring-arm which engages the under side of the connecting-bar is given increased tension.

The standard or post and connecting-bar are held in their raised and lowered positions by means of dogs *h h*, which normally engage the vertical sliding post or standard, the said post being notched on one side, at its upper part, as at *i*, to receive a lug or pawl projection, *j*, of one of said dogs, and the opposite side of said post being notched, as at *k*, at its lower part to receive the other of said dogs. Thus when one of the dogs is in engagement with the lower notch the post is prevented from sliding downward, and when the other of said dogs is in engagement with the other upper of said notches the said post is prevented from sliding upward.

The dogs are caused to enter the notches to hold the post automatically by means of a spring, *l*, which connects said dogs and causes them to spring toward one another when opportunity is afforded.

The dogs are preferably fulcrumed on the plate *m*, which provides the pivotal bearings *g'* for the head *f*, and they extend to points adjacent to the said head *f*, where they may be operated upon by eccentric projections on said head to force the dogs from the notches when it is desired to do so. Said eccentric projections (marked *n* and *o*, respectively) are so disposed on the head as that when the hand-piece is moved to the limit of its stroke toward the cross-bar, (which will then be in its elevated position, away from the poles or terminals, and one of the dogs will be in holding relation to the lower notch) one of said eccentric projections will engage with the said dog in such holding relation, and will force the said dog from said holding relation, leaving the post and connecting-bar free to be depressed by the spring-arm. The spring-arm which bears on the upper side or edge of said connecting-bar will have acquired considerable tension by the movement of the head and handle, and when the dog is finally released from the notch the said spring will act to depress the said bar with considerable force and bring it into contact with the poles. When thus depressed, the bar is held in its lower position by the other of said dogs springing automatically into engagement with the upper of the notches.

In a reverse movement of the handle (away from the connecting-bar) the other of said eccentric projections engages the other of said dogs and releases the same, and the spring which has acquired tension by the said reverse movement of the head acts to raise the said cross-bar from contact with the poles.

It will be understood that where the base is provided with a greater number of terminals the connecting-bar will be varied in construction accordingly by adding insulated forks or by other constructions. The connecting-bar makes or breaks its contact with the opposite terminals simultaneously. When the hand-piece is depressed by moving from the

bar *c*, the projection *n* engages the inclined surface *h'* of the upwardly-extending part *h'*, Figs. 3, 6, and 8, and thus causes the dog to move laterally from the post to release the same. In the reverse movement of the handle the other projection, *o*, engages the opposite dog, bearing against the seat *o'*, Fig. 6, so that said dog is thus given a movement from the post. The spring-arms are so disposed on the handled head as that they acquire considerable tension before the dogs release the connecting-bar, so that when said bar is released it is forced with a sudden movement particularly desirable, and the opposite arm will not present any material resistance to such movement.

Having thus described the invention, what I claim as new is—

1. The combination, in a circuit closer and breaker, of a base having terminals, a connecting-bar movable to and from said terminals, and a handled head having spring-arms bearing upon said connecting-bar, one of said arms serving to raise said bar when the handle is turned in one direction, and the other of said arms serving to depress said bar when said handle is turned in the reverse direction, and holders for detaining the said movable bar in either its raised or lowered position, substantially as set forth.

2. In combination, in a circuit breaker and closer, a base having terminals, a connecting-bar arranged on a post sliding at right angles to said base, suitable holders, such as the dogs *h*, for holding the said post in its raised and lowered positions, and a handled head pivoted in suitable bearings and providing arms for raising and lowering the connecting-bar, and projections for releasing the said holders, substantially as and for the purposes set forth.

3. In combination, a base having terminals, a vertically-sliding post having a connecting-bar and having notches, dogs for engaging said notches and holding said post in its raised and lowered positions, and a handled head having projections adapted to engage said dogs to release the same from holding relation to said post, and spring-arms for raising and lowering said connecting-arm when the same is released from or in contact with said terminals, substantially as set forth.

4. In a circuit breaker and closer, &c., the combination, with a base having terminals, of a vertically-sliding post having a connecting-bar, dogs adapted to hold said post at the upper or lower limit of its stroke or movement, and a handled head having arms to operate the connecting-bar, and projections to release the dogs, substantially as and for the purposes set forth.

5. In combination, a base having terminals and having a perforation to receive a sliding post, the said post having a connecting-bar to engage the terminals, dogs to engage said post and hold the same at the upper and lower limits of its movement, a spring to hold said dogs normally in contact with said post, and a

handled head having projections to release said dogs and having spring-arms to raise or lower the connecting-bar when released, substantially as and for the purposes set forth.

- 5 6. In combination, a base, a connecting-bar movable to and from said base, terminals arranged on said base and having spring-contact surfaces, and a head having spring-arms extending over and beneath said connecting-
10 bar for depressing and raising said bar from contact with the terminals, and holders for de-

taining the said connecting-bar in either its raised or lowered position, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of February, 1888.

JOHN VON DER KAMMER.

Witnesses:

CHARLES H. PELL,
CONSTANCE H. BALDWIN.