

(No Model.)

S. C. C. CURRIE.  
SECONDARY BATTERY.

No. 422,504.

Patented Mar. 4, 1890.

Fig. 1.

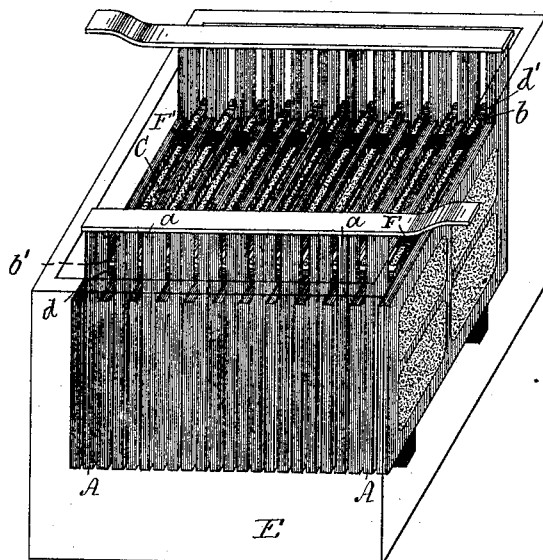
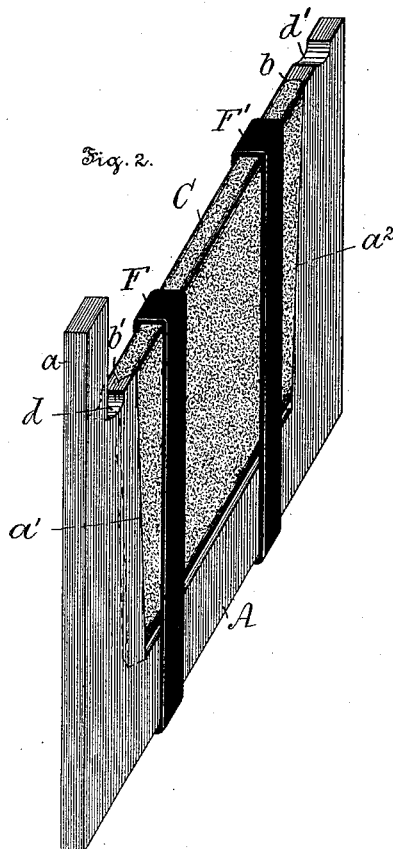


Fig. 2.



Witnesses:  
Hermann Bornmann,  
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Inventor:  
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By J. Walter Douglas,  
Att'y.

# UNITED STATES PATENT OFFICE.

STANLEY CHARLES CUTHBERT CURRIE, OF PHILADELPHIA, PENNSYLVANIA,  
ASSIGNOR TO THE UNITED GAS IMPROVEMENT COMPANY, OF SAME  
PLACE.

## SECONDARY BATTERY.

SPECIFICATION forming part of Letters Patent No. 422,504, dated March 4, 1890.

Application filed June 6, 1889. Serial No. 313,257. (No model.)

*To all whom it may concern:*

Be it known that I, STANLEY CHARLES CUTHBERT CURRIE, a subject of the Queen of Great Britain, but now residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Secondary or Storage Batteries, of which the following is a specification.

10 The principal object of my invention is to provide a frame to support a plate or element of a secondary or storage battery, and to permit of its being removed and replaced by another without interfering with the other plates  
15 or elements of the system mounted in battery.

My invention consists of a frame for a plate or element of a secondary or storage battery of any suitable exterior shape or form, and  
20 having a receptacle adapted to not only receive the plate or element, but also to permit of its ready removal for the insertion of another without disturbing the other plates or elements of the system mounted in bat-  
25 tery. The two walls of the receptacle are by preference made to taper from top to bottom, and are grooved or recessed in order to hold the inserted plate or element. One of the walls of the receptacle is made, by preference,  
30 to project above the opposing one, forming a lug or terminal. The plate or element inserted in the supporting-frame is surrounded or encircled by a band or bands of insulating material to not only hold the same firmly  
35 therein, but also to insure a good contact of the supporting-frame with the plate or element. The frame may be made of lead or other preferred material.

The nature and characteristic features of  
40 my invention will be more fully understood by reference to the accompanying drawings, forming part hereof, and in which—

Figure 1 is a perspective view of two systems of plates or elements mounted in sup-  
45 porting-frames embodying the features of my invention and each properly insulated from the other in the cell; and Fig. 2 is a similar view in perspective of one of the plates or elements mounted in the supporting-frame  
50 and wedged therein by means of the bands

of insulating material surrounding the same and embodying the features of my invention.

Referring to the drawings, A is the supporting-frame, made of lead or other preferred material. This frame, of any exterior shape  
55 or form, is provided with a receptacle into which a plate or element C is inserted and held in position. One of the vertical walls  $a'$  of the receptacle projects beyond or above the opposing one  $a^2$ , forming a lug or terminal  $a$ . These walls  $a'$  and  $a^2$  of the receptacle taper, by preference, from top to bottom—that is, the space between the two walls of the frame is greater at the top than at the  
60 bottom, and these walls are preferably provided with grooves or recesses  $b$  and  $b'$  for the reception of the plate or element C, composed of active material, or material to become active.

After the plate or element C has been in-  
serted in the frame A and held in position by the side walls  $a'$  and  $a^2$  thereof, one or more bands F and F' of insulating material—such as rubber—are caused to circumscribe or surround the frame A and plate or element C,  
75 thereby exerting sufficient pressure against the plate or element to insure a good contact between the frame A and the active plate or element C. Between the lower edge of the inserted active plate or element C and the upper edge of the base of the frame A a space  
80 is left to allow sufficient play of the plate or element C, or to compensate for expansion or other action that may take place of the plate or element C, either while “forming” or dis-  
85 charging mounted in battery.

The bands F and F' of insulating material which encircle or surround the bottom of the frame and the upper edge and portions of the faces or sides of the plate or element C not  
90 only serve to properly insulate one plate or element from its neighbor in the cell R, but also permit of the active plate or element being readily removed for the insertion of another by permitting the respective bands F  
95 and F' to occupy positions in the recesses  $d$  and  $d'$  of the supporting-frame A, while removing said plate or element and inserting another in place thereof.

Having thus described the nature and ob- 100

jects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A supporting-frame provided with a receptacle having vertically - inclined walls adapted to receive a plate or element composed of active material, or material to become active, and to allow of the same being readily removed and replaced without disturbing said supporting-frame.
2. A supporting-frame provided with a receptacle having grooved or recessed walls for the reception of a plate or element composed of active matter, or matter to become active, substantially as and for the purposes described.
3. A supporting-frame with a receptacle having recesses or grooved vertical or inclined walls for the reception of a plate or element and a space between the plate or element and the base of the frame, substantially as and for the purposes described.
4. A supporting-frame provided with a re-

ceptacle having recessed or grooved walls for the reception of a plate or element and a band or bands of insulating material encircling the plate or element and frame to not only hold said plate or element in said frame, but also to insure a good contact of the frame with the plate or element.

5. A supporting-frame having recessed or grooved vertical or inclined walls and recesses in the upper edges thereof, a plate or element held in said grooved or recessed walls, and a band or bands encircling said plate or element and frame, substantially as and for the purposes described.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

STANLEY CHARLES CUTHBERT CURRIE.

Witnesses:

J. WALTER DOUGLASS,  
THOMAS M. SMITH.