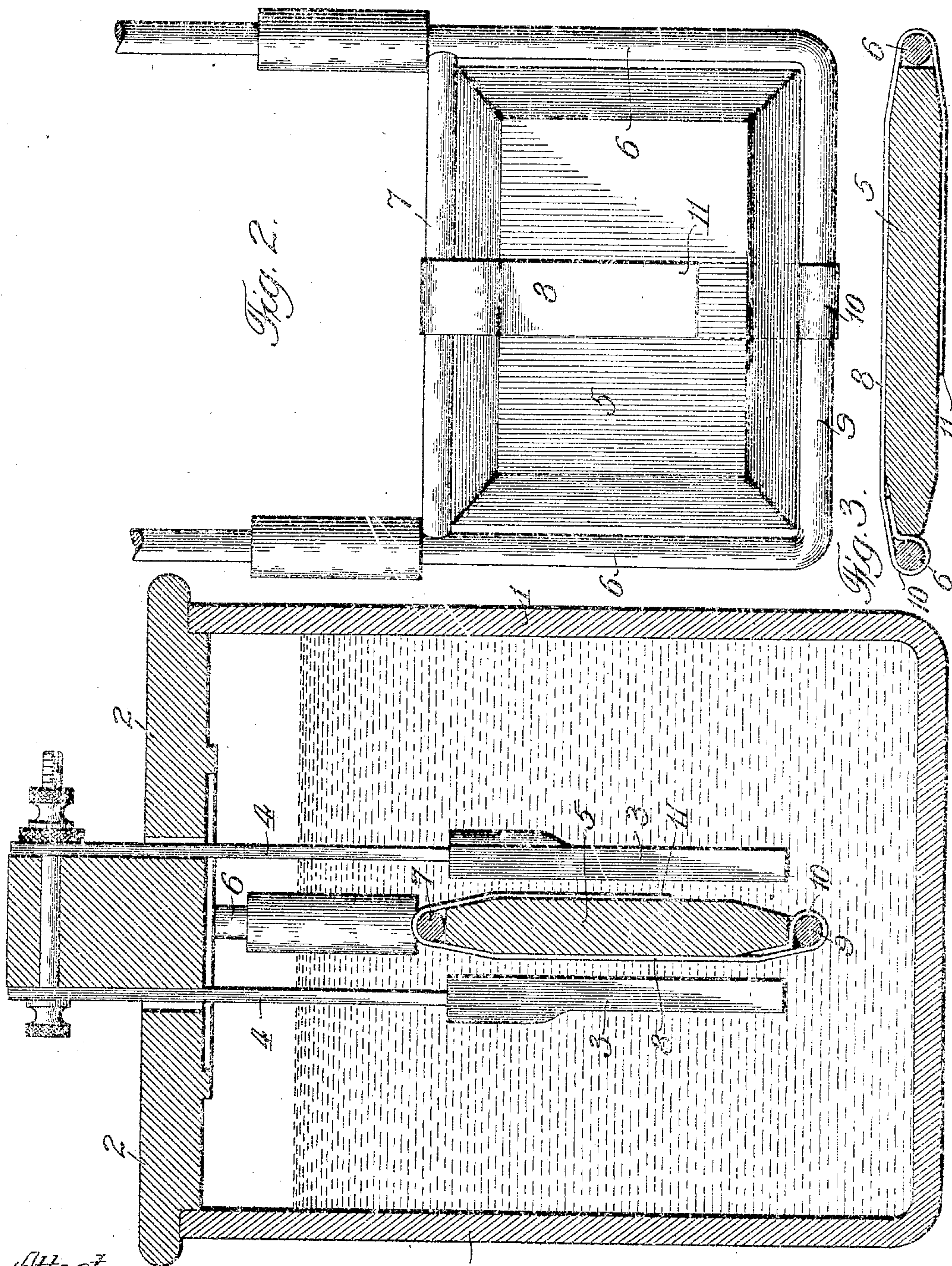


No. 786,704.

PATENTED APR. 4, 1905.

D. L. WINTERS.  
GALVANIC BATTERY.  
APPLICATION FILED JAN. 3, 1905.



Attest:

John Enders.

M. H. Holmes.

Fig. 1.

1

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by Robert Burns

Attorney.



# UNITED STATES PATENT OFFICE.

DAVID L. WINTERS, OF CHICAGO, ILLINOIS.

## GALVANIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 786,704, dated April 4, 1905.

Application filed January 3, 1905. Serial No. 239,332.

*To all whom it may concern:*

Be it known that I, DAVID L. WINTERS, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Galvanic Batteries, of which the following is a specification.

This invention relates to holding means for the negative electrodes of galvanic batteries, and has for its object to provide a simple, durable, and effective holder or clip for supporting the negative electrode within its carrying-frame in a readily removable and replaceable manner, as will hereinafter more fully appear, and be more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical section of a galvanic battery, illustrating the application of the present invention. Fig. 2 is a detail side elevation of the negative electrode, its holding-frame, and the present holder or clip in assembled relation. Fig. 3 is a horizontal section of a modified arrangement of the holder or clip.

Similar numerals of reference indicate like parts in the different views.

Referring to the drawings, 1 is the battery-cell, provided with the usual removable cover 2, from which the positive and negative electrodes are suspended, so as to be removable therewith from the battery-cell.

3 represents one or more positive electrodes, of zinc or like electropositive material, suspended from the cover 2 by the usual supporting-bars 4, attached to the cover, as shown in Fig. 1, or in any other usual or suitable manner.

5 is the negative electrode of copper oxid or like electronegative material, preferably of the rectangular form shown and arranged between the pair of positive electrodes when a pair of the same is used in a single cell, as shown in Fig. 1.

6 is a U or stirrup shaped frame depending from the cell-cover 2 and adapted to support the negative electrode of the battery, and such frame in the preferred form of the present invention is provided with an upper horizontal cross rod or bar 7 for the purpose hereinafter stated.

8 is a holding-clip for securing the negative electrode in place in the frame 6 in a readily-movable manner. In the present improvement such clip consists of a single plate or bar, of resilient material, bent upon itself, with a flat loop open at one side. Such plate or bar is secured at one end to the lower horizontal bar 9 of the frame 6 by a folded eye 10 or other equivalent means, while its other end, after passing around the upper horizontal bar or rod 7 of said frame in the loop form shown and described, extends down to form a free-ended spring-tongue 11, under which the electrode is inserted and held, as illustrated in Figs. 1 and 2.

The scope of the present invention is, however, intended to embrace an arrangement wherein the above-described holder or clip is attached to the vertical members of the supporting-frame 6 instead of to the horizontal upper and lower members thereof, as described in connection with the preferred form of the present invention. Such modified arrangement is shown in Fig. 3 of the drawings.

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

1. In a galvanic battery of the type herein described, the combination of a negative electrode, a frame for supporting the same, and a holder or clip formed of a plate or bar of resilient material bent into an open-sided flat loop adapted to embrace opposed members of said frame and hold the negative electrode in place therein, substantially as set forth.

2. In a galvanic battery of the type herein described, the combination of a negative electrode, a frame for supporting the same, and a holder or clip formed of a plate or bar of resilient material bent into an open-sided flat loop adapted to embrace opposed members of said frame, with one end fastened to one of said members and the other end left free to constitute a spring-tongue, substantially as set forth.

3. In a galvanic battery of the type herein described, the combination of a negative electrode, a frame for supporting the same and having a pair of vertical and a pair of horizontal members connected together, and a

holder or clip formed of a plate or bar of resilient material bent into an open-sided flat loop adapted to embrace the horizontal members of said frame, with one end fastened to  
5 one of said horizontal members and the other end left free to constitute a spring-tongue, substantially as set forth.

Signed at Chicago, Illinois, this 22d day of December 1904.

DAVID L. WINTERS.

Witnesses:

ROBERT BURNS,

M. H. HOLMES.