

(No Model.)

J. BEATTIE, Jr.

BATTERY ZINC AND METHOD OF MAKING THE SAME.

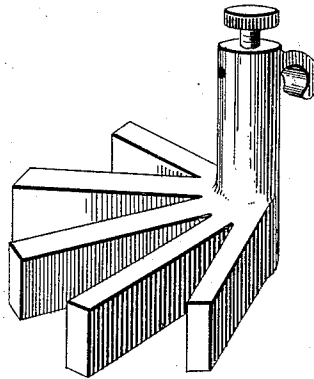
No. 466,820.

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*Fig. 1.*



*Fig. 2.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOHN BEATTIE, JR., OF FALL RIVER, MASSACHUSETTS.

## BATTERY-ZINC AND METHOD OF MAKING THE SAME.

SPECIFICATION forming part of Letters Patent No. 466,820, dated January 12, 1892.

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### *To all whom it may concern:*

Be it known that I, JOHN BEATTIE, Jr., a citizen of the United States, residing in Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Battery-Zincs, of which the following is a specification.

My invention relates to zincs for galvanic batteries, the object being to produce a thoroughly-amalgamated zinc alloyed with magnesium. This product increases the electromotive force of the battery and possesses the advantage of being perpetually amalgamated.

The process by which I manufacture my improved zinc is as follows: I cast pure zinc into small blocks or strips and place about five pounds of the latter into a jar with seven ounces of mercury. Then I cover the whole with a twelve-per-cent. solution of sulphuric acid and water and allow it to stand about five hours, when I drain the liquid off. The zinc is then partially amalgamated and in good condition for completing the amalgamation by heat, which is the next step in the process. The temperature necessary to melt the zinc is quite low. As soon as it is melted about four per cent. of magnesium is added and mixed, and then the alloy is cast into small billets or blocks and allowed to cool. The finished battery-zinc is then made by adding to pure molten zinc a number of blocks of alloy, the proportion of the alloy to the zinc being governed by the kind of battery which the zinc is to be used in. The alloy will be found to melt and mix readily, after which the zinc may be cast into pencils, crow-foot, star, sheet, or other form desired.

The proportions given above I regard as the best for making a good article; but I do not confine myself to them. The acid solution may contain any amount of acid between

ten and fifteen per cent., and the quantity of mercury may of course be varied, the best results being obtained from five to twelve per cent.

An amalgamated zinc made by this process, without the addition of magnesium, is cheap and simple of manufacture and the product equally as good, if not better, as any zinc amalgamated throughout its entire body.

In the drawings, Figures 1 and 2 represent two forms into which the product herein described may be cast.

Having thus described my invention, I claim—

1. An element for galvanic batteries, consisting of an alloy of zinc, mercury, and magnesium.

2. The process of making the zinc element of galvanic batteries, consisting in making a crucible mixture of zinc, magnesium, and mercury, casting the same into small blocks or strips, and then adding a number of the blocks or strips to pure molten zinc, and casting the same into the final form.

3. The process of making the zinc element of galvanic batteries, consisting in subjecting divided zinc and free mercury to the action of a solution of sulphuric acid and water until partial amalgamation takes place, then drawing off the liquid and heating the metal until it melts, then adding thereto a quantity of magnesium, then casting into blocks or strips, then adding a number of the blocks or strips to pure molten zinc, and finally casting the same into the required form.

In witness whereof I have hereunto affixed my seal and signed my name in the presence of two subscribing witnesses.

JOHN BEATTIE, JR. [L.S.]

Witnesses:

FRANK B. CAMPBELL,  
WILLIAM F. STOREY.