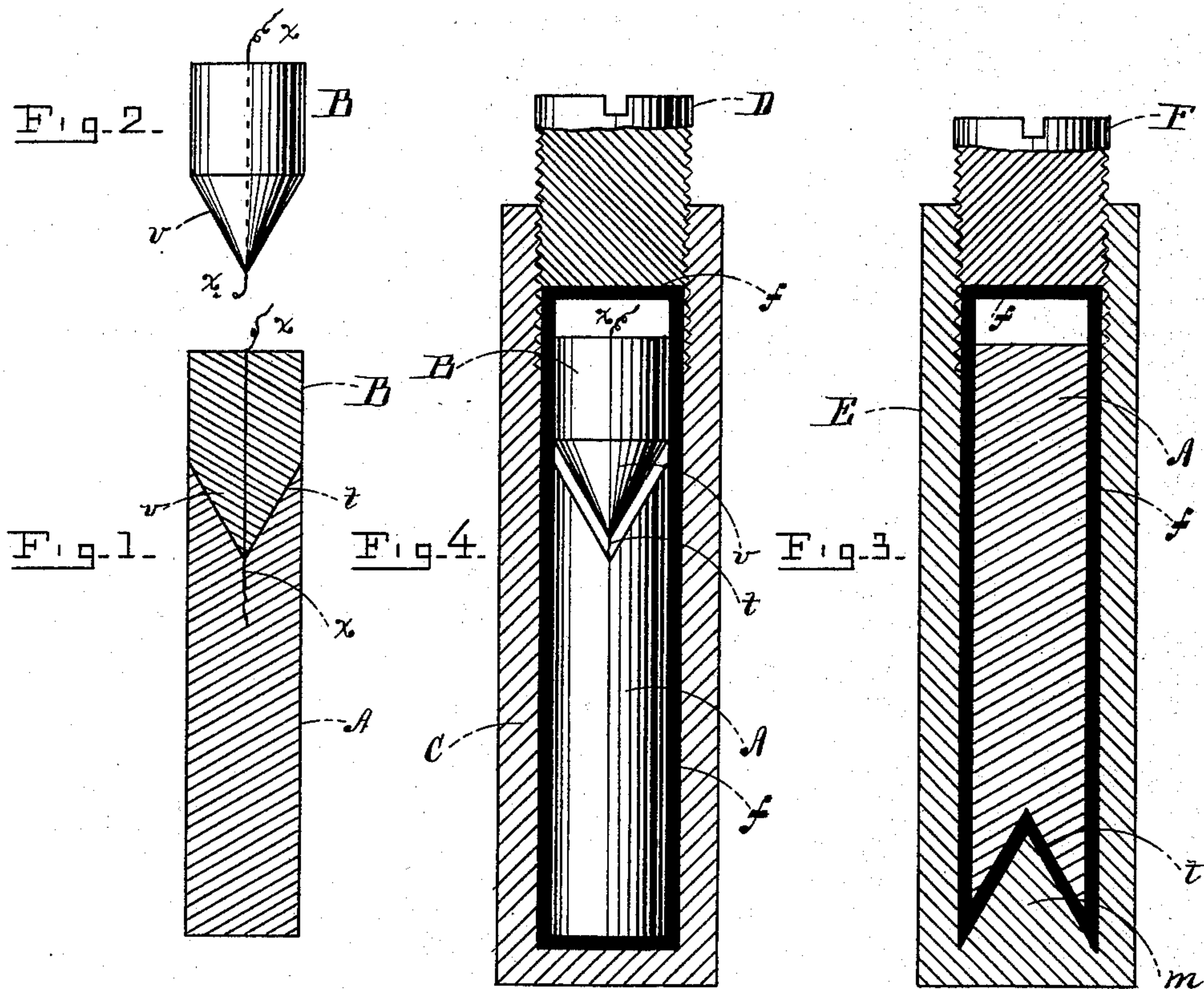


(No Model.)

R. L. CARR & P. BORDEN.
PROCESS OF MAKING BATTERY ZINCS.

No. 388,628.

Patented Aug. 28, 1888.



WITNESSES=
C. M. Linney,
J. H. Hubbard.

Robert L. Carr, INVENTORS,
Parker Borden,
C. A. Shaw & Co.,
ATTYS.

UNITED STATES PATENT OFFICE.

ROBERT L. CARR AND PARKER BORDEN, OF FALL RIVER, MASSACHUSETTS.

PROCESS OF MAKING BATTERY-ZINCS.

SPECIFICATION forming part of Letters Patent No. 388,628, dated August 28, 1888.

Application filed December 15, 1887. Serial No. 257,979. (No model.)

To all whom it may concern:

Be it known that we, ROBERT L. CARR and PARKER BORDEN, of Fall River, in the county of Bristol, State of Massachusetts, have invented
5 a certain new and useful Improvement in Processes of Making Battery-Zincs, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention apper-
10 tains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical longitudinal section of our improved battery-zinc; Fig. 2, a side ele-
15 vation of the cap detached; Fig. 3, a vertical longitudinal section showing the method of casting the body, and Fig. 4 a vertical longitudinal section showing the method of uniting the body and the cap.

20 Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

In battery-zincs as ordinarily constructed much difficulty is experienced in preventing
25 oxidation of the parts at the point where the conducting-wire is connected with the zinc, such oxidation reducing the conductivity of the parts, and hence the electro-motive force of the battery.

30 Our invention is designed to obviate this difficulty or objection, and also to produce a more durable, effective, and otherwise desirable article of this character than is now in ordinary use, and to that end we employ means
35 that will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the body of the zinc, and B the cap.

40 The cap B, which may be cast or formed in any manner known to the arts, is composed of pure or approximately pure zinc, and provided with a conducting-wire, *x*, which extends longitudinally and centrally through the same,
45 and projects slightly from the top and bottom thereof, as best seen in Fig. 2. The lower portion, *v*, of the cap B is conical, the wire *x* being coated or tinned before it is cast into the same, to cause it to be hermetically united there-
50 with, and thereby prevent oxidation between the cap and wire.

The body A is composed of a homogeneous mass or amalgam of zinc and mercury, and may be produced by any method known to the arts. It is molded or formed with a conical socket, *t*, in its upper end for receiving the conical
55 lower end, *v*, of the cap B.

For connecting the cap and body of the zinc we make use of the metallic vessel C, provided with a metallic screw-plug, D, the interior of
60 said vessel and lower end of said plug being coated with fire-clay, *f*, to prevent any tendency of the body A or cap B to adhere thereto after being submitted to the action of heat, although
65 this feature may be omitted, if desired. The body A is placed in the vessel C, with its socket *t* uppermost, after which the conical end *v* of the cap B is immersed in a solution of chloride of zinc or other suitable flux, and placed in
70 said vessel above said body, the cone *v* and lower end of the wire *x* resting in the socket *t*. The plug D is then screwed in and the vessel submitted to the action of heat at a temperature sufficient to melt or partially melt the
75 body and cap. As the body and cap soften by the heat, the cap drops fully into its seat in the socket *t*, and the cap, body, and wire become united or are brazed together in a manner that
80 will be readily understood by all conversant with such matters without a more explicit description. Care should be taken not to raise the temperature of the vessel C any higher than is actually necessary to cause the body,
85 cap, and wire of the zinc to be brazed together properly, and also to handle said vessel in such a manner, when the contents are in a liquid or partially liquid state under the action of heat, as to avoid displacing the cap and wire. After the cap and wire have been brazed, as
90 described, the vessel C is permitted to cool and the zinc removed.

The body of the vessel for brazing the cap, wire, and body of the zinc together may be made in two or more parts and the parts secured together by clamps; or a vessel of any
95 other suitable construction for the purpose may be employed instead of the vessel C.

In Fig. 3 a metallic mold, E, provided with a metallic screw-plug, F, is shown, by means of which we cast or form the body A of the
100 zinc, said mold being coated interiorly with fire-clay, *f*, and having an upwardly-projecting

cone, *m*, centrally disposed on its bottom for producing the socket *t* in the top of said body. The body *A* may, however, be molded or formed in any other convenient and suitable manner, and it may also be composed of a pencil or piece of zinc which is amalgamated with mercury exteriorly only, in the usual manner, instead of a homogeneous mass of mercury and zinc.

10 The socket *t* in the body *A* may also be made in any other suitable form, if desired, the lower portion of the cap *B* being, of course, changed accordingly; or the socket may be omitted and the top of the body and bottom of the cap constructed flat and on the same plane, if preferred, without entirely departing from the spirit of our invention.

We do not confine ourselves strictly to uniting the body, cap, and wire of the zinc by submitting them to heat within a closed vessel, as heat may be applied and these parts brazed together by other means, if desired, although we deem the method described preferable to any other with which we are familiar.

25 As we have made the battery-zinc herein described the subject matter of another application for Letters Patent, filed December 27, 1887, Serial No. 258,948, we do not herein claim the same broadly.

30 Having thus explained our invention, what we claim is—

1. The improved process of constructing battery-zincs herein described, the same consisting, essentially, of forming a body consist-

ing wholly or in part of an amalgam of zinc and mercury, and a cap consisting of pure or approximately pure zinc, and having a conducting-wire cast therein and projecting at two sides thereof, placing said body, cap, and wire in a closed vessel, and submitting them to heat to unite them, substantially as set forth.

2. That improvement in the process of constructing battery-zincs which consists in forming a body composed wholly or in part of an amalgam of zinc and mercury, and having a socket in its upper portion, and a cap composed of pure or approximately pure zinc and provided with a conducting-wire cast or fused into the same, placing said body and cap in a closed vessel with a portion of the cap and wire in said socket, and submitting them to the action of heat to unite them, substantially as described.

3. That improvement in the process of constructing battery-zincs which consists in tinning the conducting-wire, casting a pure or approximately pure zinc cap around the same, leaving the ends of said wire projecting, and then uniting said cap and wire to the body of the zinc by the action of heat, a proper flux being employed between the united parts, substantially as set forth.

ROBERT L. CARR.
PARKER BORDEN.

Witnesses:

MATTHEW C. YARWOOD,
HUGO A. DUBUQUE.