J. LEITER.

Galvanic-Battery.

No. 161,246. Patented March 23, 1875.

Fig.1.

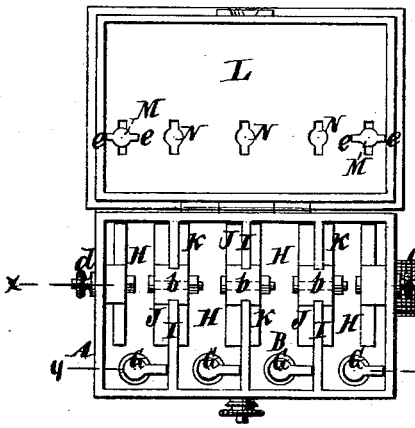


Fig.2.

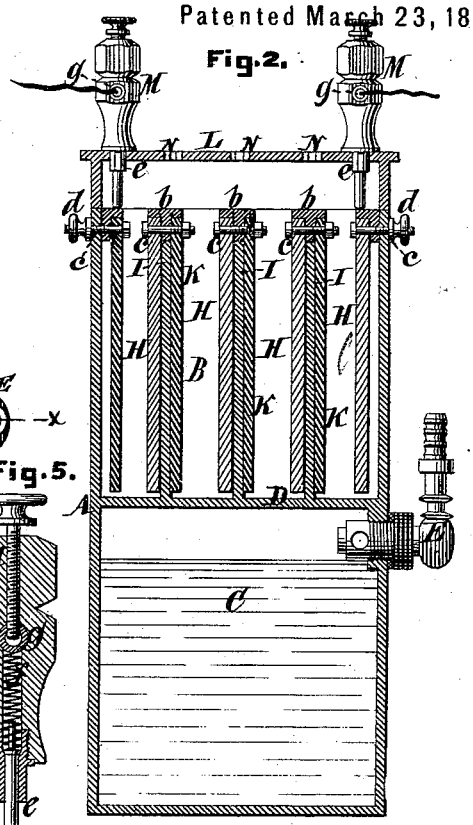


Fig.5.

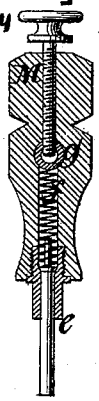


Fig.3.

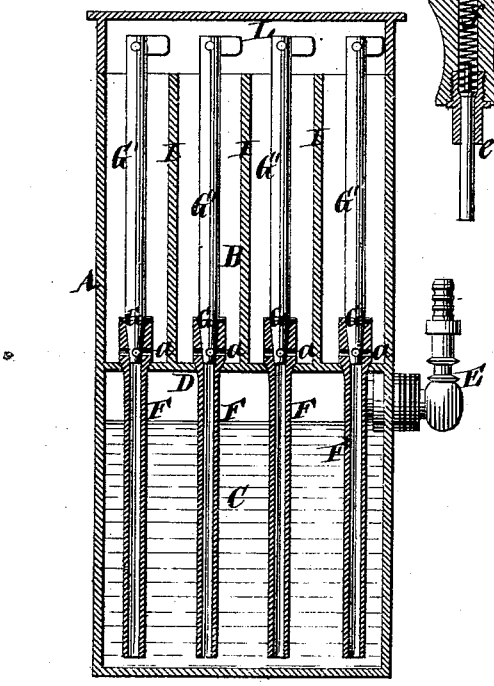
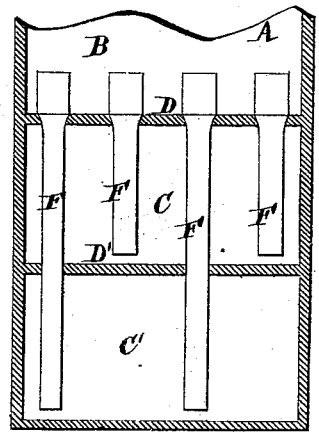


Fig.4.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOSEF LEITER, OF VIENNA, AUSTRIA.

IMPROVEMENT IN GALVANIC BATTERIES.

Specification forming part of Letters Patent No. **161,246**, dated March 23, 1875; application filed February 24, 1875.

To all whom it may concern:

Be it known that I, JOSEF LEITER, of Vienna, in the Empire of Austria, have invented a certain new and Improved Galvanic Battery, of which the following is a specification:

This invention is illustrated in the accompanying drawing, in which—

Figure 1 is a plan view of my battery with its lid thrown back. Fig. 2 is a vertical section in the line *x x*, Fig. 1. Fig. 3 is a similar section in the line *y y*, Fig. 1. Fig. 4 is a sectional view of a modification. Fig. 5 is a detail view of one of the keys.

Similar letters indicate corresponding parts.

The object sought to be accomplished by this invention is to hermetically seal a battery against spilling of its liquid contents when undergoing transportation, and, furthermore, to retain the liquid distant from the elements of the battery when not in use in order to avert needless consumption.

My battery is constructed of a cup divided into two compartments, which communicate with each other through one or more pipes, and one of which contains the elements of the battery, while the other is provided with a cock for the admission of liquid and air, as well as for the discharge of liquid, in such a manner that if the lower compartment is filled and air is forced in through the cock, the liquid is caused to ascend to the upper compartment, in which it is retained or from which it is discharged, as the case may be, through the medium of stoppers arranged to be manipulated above the top of the compartment or the liquid. The upper compartment is subdivided into a series of cells, each of which has a connecting-pipe with the lower compartment, and each of which contains a carbon or zinc element, or their equivalent, the elements being connected together, by means of tie pieces and bolts, in such a manner that, by adjusting the tie-pieces on the edge of the partitions, the elements are held immersed in the liquid of the cells. The cup is provided with a lid which has in it a number of holes through which keys are admitted to the elements, the keys being made telescopic, and having combined therewith a spring whereby they are firmly held in contact with the elements, as hereinafter fully described.

In the drawing, the letter A designates what is known as the "cup" of a battery, which I prefer to make of hard caoutchouc; and B C are the compartments of the cup, formed by a horizontal partition, D. The lower compartment C serves to receive the acidulated liquid used in the battery, which liquid is introduced to said compartment through a cock, E, located immediately below the horizontal partition D. F designates pipes (one or more) that form the avenue of communication between the two compartments B C, the pipes extending from the bottom of the upper compartment to near the bottom of the lower one. When liquid has been filled into the compartment C to about a level with the cock E, and air is forced in through the cock, the pressure of the air on the liquid causes it to rise in the pipes F, whence it flows into the compartment B, provided the stoppers of the pipes are in an open condition. The mouths of the pipes F, respectively, are bored out, so as to form seats for stoppers G, which are, preferably, made conical, hollow, and with a transverse aperture, *a*, which latter, when the stoppers are turned in the proper direction, coincides with one or more holes formed in the seats of the stoppers, (see Fig. 3,) and thereby the stoppers are opened. When the stoppers G are in an open condition, as just described, and the pressure of air in the compartment C is continued, the liquid flows into the compartment B until it is properly filled.

If the pressure of air is taken off, and the stoppers G are in an open condition, the liquid returns to the lower compartment C, and by this means the battery is rendered suitable for transportation, the liquid being not liable to spill or leak out, while it does not consume the elements during this time. By turning the aperture *a* of the stoppers away from the hole in their seats, the flow of the liquid is stopped either to or from the compartment B. The shanks G′ of the stopper G rise to above the edge of the compartment C and have suitable finger-pieces, so that access is had to them and the stoppers can readily be opened or closed. The stoppers may have various forms, as for instance, that of a screw or of an ordinary stop-cock, instead of that here shown. The cock E serves to discharge the

liquid from the compartment C, to do which the cup is inverted and the cock turned so as to point downward. When this cock is turned laterally it indicates also when the compartment C is properly filled. The upper compartment B is subdivided into a series of cells, H, the partitions I of which serve to support the elements of the battery, namely, through the medium of the tie-pieces *b*, which, together with bolts *c*, serve to connect a carbon and zinc plate, J K, or their equivalent, together, and which are fitted in recesses formed in the top edge of the partitions in such a way that when adjusted in place the elements are held immersed in the liquid of the cells. Elements also are held against or near the side of the cellular compartment B by means of bolts *c* and adjusting-screws *d*, parallel with the other plates J K, in order to mate the elements suspended on the outer side of the outer partitions. It is obvious that these elements can be displaced and taken out without the aid of any complicated mechanism. To the edge of the compartment B is hinged, or otherwise secured, a lid, L, having a suitable fastening device, and in which are formed a series of holes, N, to which are fitted the lower portions of telescopic keys M. These keys are provided with one or more bits, *e*, and the holes N with corresponding branches, so that the keys can be inserted through the holes, and, when turned, are securely held in place. Between the two parts of the telescopic keys M, is arranged a spring, *f*, Fig. 5, which has a tendency to keep the lower part of the keys in contact with the elements or with the tie-pieces *b* when the lid is shut, as shown in Fig. 2. The upper end of the spring *f* comes in contact with the lining *g* of the hole that receives the wire, and by this means serves to complete the circuit of the apparatus. A number of holes are made in the lid corresponding to the number of elements used, and in either of which the keys M may be inserted according to the number of elements it is desired to bring into requisition.

In Fig. 4 I have shown a modification of the compartment C, a second horizontal partition, D′, being added, so as to form two compartments, C C′ adapted to receive different kinds of liquids, and in each of which each alternate pipe F extends. Each of these compartments C C′ is provided with a suitable cock.

The advantages of my apparatus are apparent, and it may be remarked that the charging of the elements requires about two to four minutes, wherefore my battery has a special value for medical, technical, and experimental purposes.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a galvanic battery, the combination of the cup A, its horizontal partition D, one or more connecting-pipes, F, stopper G, and cock E, substantially as described.

2. In combination with the partition I of the compartment B, the tie-pieces *b*, supporting the elements of the battery, substantially as described.

3. The combination, with the cup A, of the lid L, having the holes N, and telescopic keys M, having springs *f*, substantially as described.

In testimony that I claim the foregoing, I have hereunto set my hand this 14th day of January, in the year 1875.

JOSEF LEITER.

Witnesses:
FRANZ WIRTH,
FRANZ HASSLACHER.