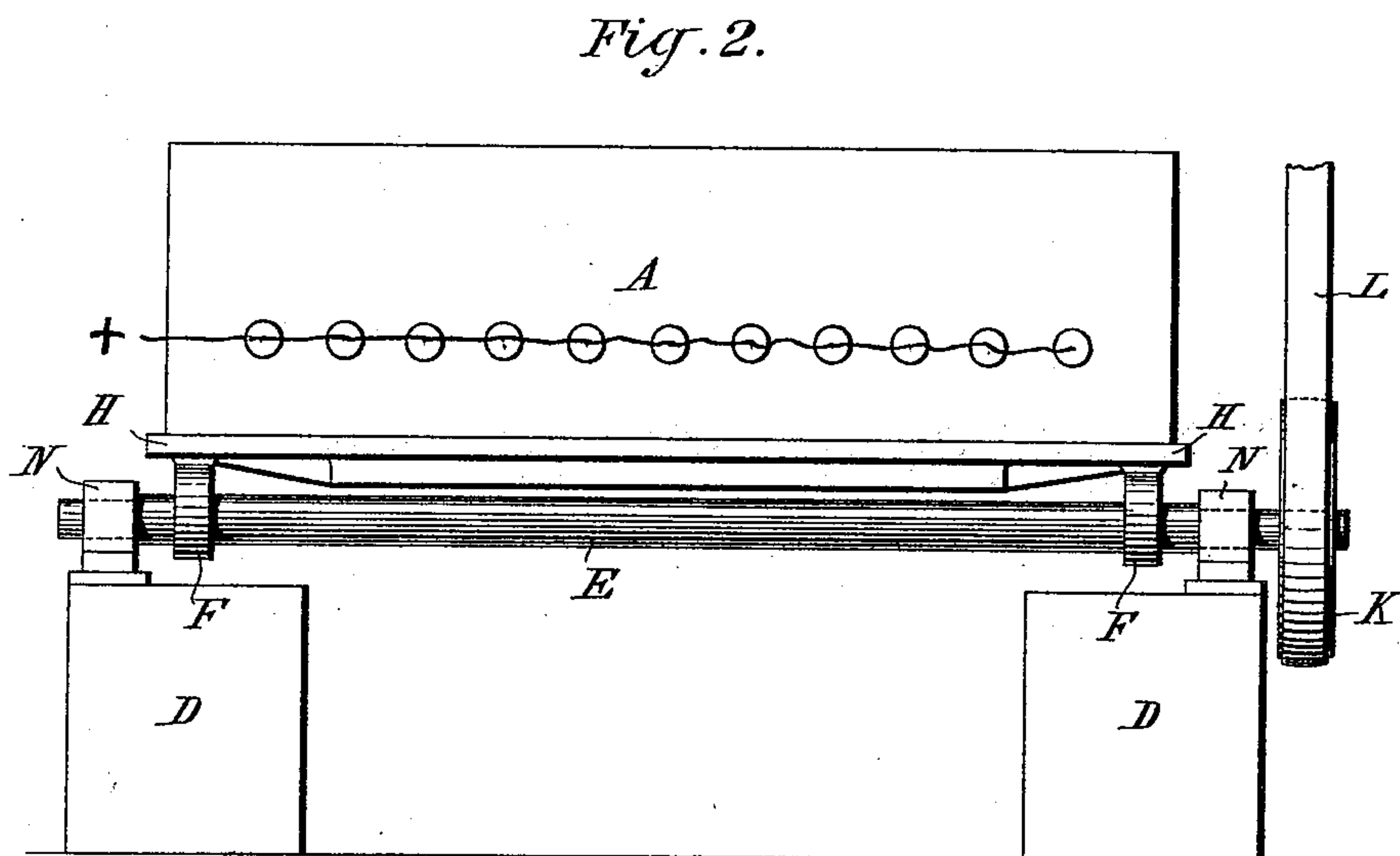
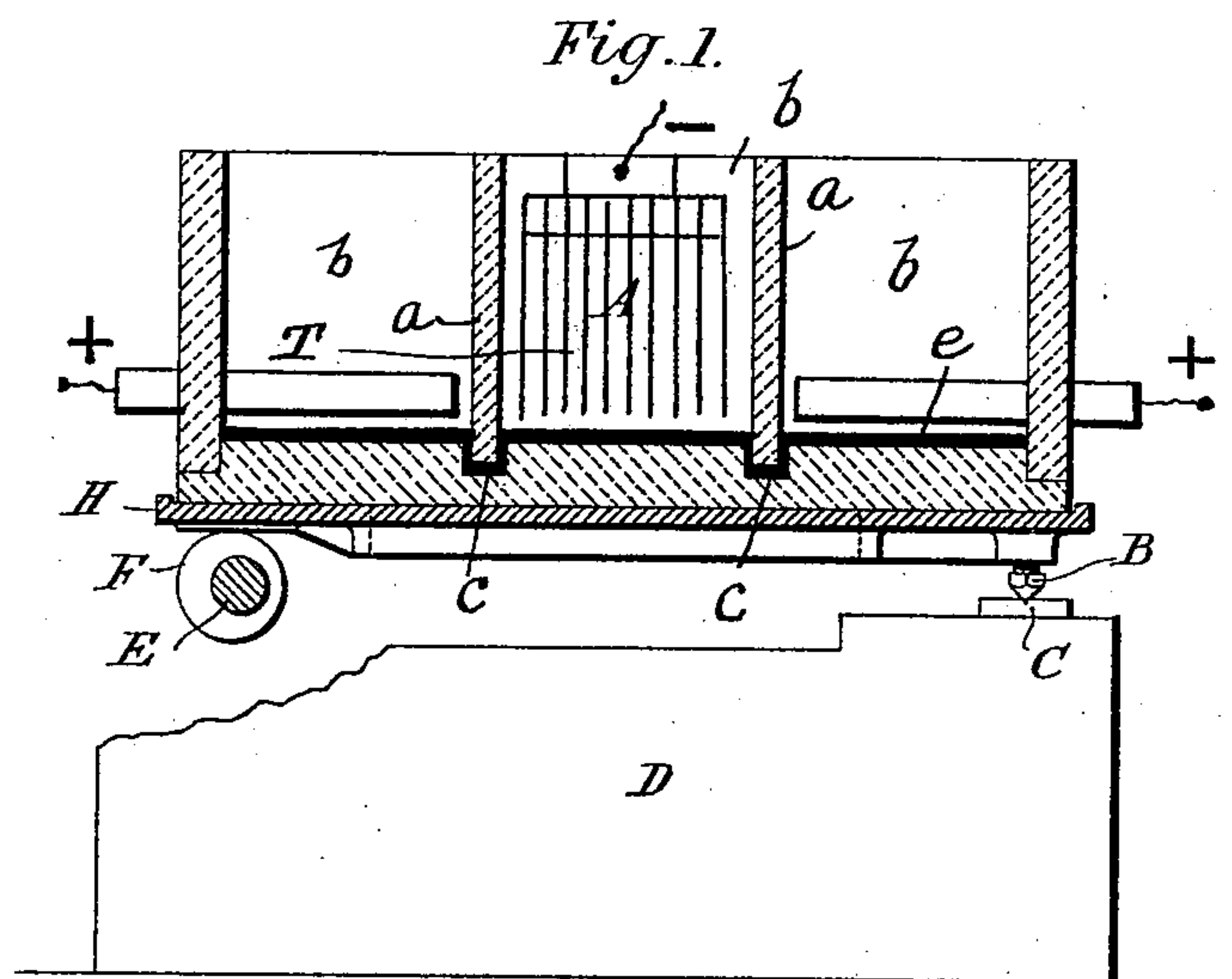


(No Model.)

H. Y. CASTNER.
ELECTROLYTIC APPARATUS.

No. 518,135.

Patented Apr. 10, 1894.



Witnesses.
A. N. Hobson
G. P. Kramer.

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UNITED STATES PATENT OFFICE.

HAMILTON YOUNG CASTNER, OF LONDON, ENGLAND.

ELECTROLYTIC APPARATUS.

SPECIFICATION forming part of Letters Patent No. 518,135, dated April 10, 1894.

Application filed June 8, 1893. Serial No. 476,939. (No model.)

To all whom it may concern:

Be it known that I, HAMILTON YOUNG CASTNER, a citizen of the United States, residing at 13 Abchurch Lane, in the city of London, England, have invented certain new and useful Improvements in Connection with Electrolytic Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of electrolytic apparatus in which it is necessary that a certain portion of the substance or material contained therein should be moved from cell to cell; the invention being particularly applicable for carrying out the process described in the specification of application filed September 26, 1892, Serial No. 446,915. In said specification is described a process of forming an amalgam or alloy particularly between mercury and sodium, the latter being formed by deposition from a solution of chloride of sodium which after being deposited in the mercury is moved with said mercury to a second compartment where it is separated forming caustic soda.

The object of the present invention is to produce simple mechanical means for securing the circulation of mercury or amalgam, as depending upon this is the success of the process. To this end the invention consists in so mounting the electrolytic cells that they shall be capable of being rocked or tilted by mechanical means at regular intervals, the result being that the mercury or other material at the bottom of one compartment will be caused to flow to the compartment next in order from whence it will be returned after being subjected to suitable electric action therein. It will be evident that the desired end may be accomplished by pivoting or supporting the bath in a variety of ways and that the requisite rocking or tilting motion may be imparted thereto by a variety of devices. By experiment it is judged, however, that a convenient method of carrying out the invention will be as follows, reference being made to the drawings which form part of the specification and in which—

Figure 1 represents the side sectional elevation and Fig. 2 a front end view of same.

In said drawings A represents an electrolytic apparatus having three compartments, the rear end of same being supported on adjustable pivot points or knife edges B, by means of which the level of the cell may be adjusted. Such pivot points or knife edges rest on metal plates C, which in turn rest on the usual supporting walls or frame D. The front of the apparatus is supported on eccentrics F secured to shaft E, said eccentrics bearing against the metal plate H or upon the bottom of the cell as the case may be. As however the cells are frequently made of slate or like material, it will be evident that a metallic bearing surface will frequently be desirable. Shaft E is supported and driven by any suitable means, such as by bearings N N, belt L and pulley K. The speed of rotation of said shaft and the shape of the eccentrics will necessarily vary depending upon the tilt which it is desired to give to the cell and the rapidity with which such tilting action is to be repeated. When carrying out the process described in the said former specification it is judged that with a depth of mercury or amalgam of about an eighth of an inch it will only be necessary to raise and lower the front of the cell about an eighth of an inch above and below the horizontal plane and this result may be attained with an eccentric having a pitch of a fourth of an inch; the speed of the revolving shaft being adjusted to allow time during which the mercury or amalgam may flow and come to a level between each tilting action.

Referring again to the accompanying drawings, *a*, represents the partitions which divide the cell into the several compartments *b*, the said partitions fitting into grooves *c*, formed in the bottom of said cell, so as to leave spaces beneath the same, as shown. In the bottom of the cell is a layer of mercury *e*, while contained or arranged within preferably the central compartment *b*, is the electrode T, the said electrode having the electrical connections indicated by the usual plus and minus signs or symbols.

What I claim is—

1. The combination with an electrolytic cell provided with compartments having means of communication, of means for causing the contained mercury or other substance to circu-

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late between said compartments by the action of gravity, substantially as described.

2. The combination with an electrolytic cell provided with compartments having communicating passages at the bottoms, of means for rocking said cell so as to cause the contained mercury or other substance to circulate or flow between the compartments, substantially as described.

10 3. An electrolytic cell composed of a number of compartments divided by partitions having spaces beneath the same, an electrode and suitable connections, a layer of mercury and means for imparting to said cell a rock-

ing movement to cause the mercury to flow 15 from one compartment to the other and back again, substantially as shown and for the purpose described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing 20 witnesses.

HAMILTON YOUNG CASTNER.

Witnesses:

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