

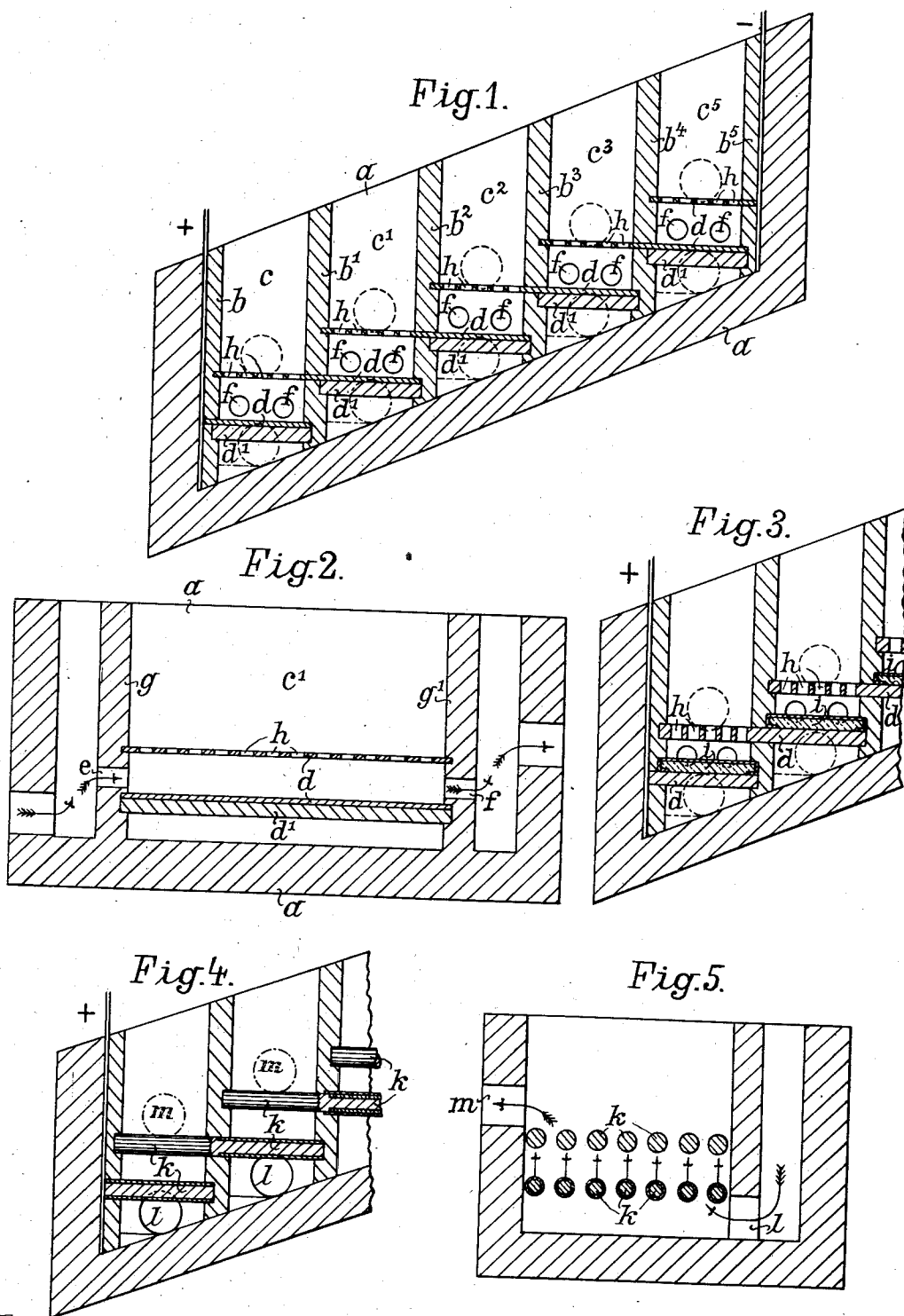
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R. KOTHER.

ELECTRODE FOR USE IN THE MANUFACTURE OF BLEACHING LIQUOR.

APPLICATION FILED NOV. 3, 1905.



Witnesses:-
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UNITED STATES PATENT OFFICE.

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ELECTRODE FOR USE IN THE MANUFACTURE OF BLEACHING LIQUOR.

No. 832,983.

Specification of Letters Patent.

Patented Oct. 9, 1906.

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To all whom it may concern:

Be it known that I, RICHARD KOTHER, a subject of the King of Saxony, and a resident of Cunewalde, No. 178, Kingdom of Saxony, German Empire, have invented a new and useful Improvement in Electrodes for Use in the Manufacture of Bleaching Liquor, of which the following is a specification.

This invention relates to electrolytic apparatus such as are used for obtaining bleaching liquor from solutions of rock-salt, and relates to that form of apparatus in which a vessel is divided into separate compartments by non-conducting vertical partitions through which bipolar electrodes pass horizontally.

The present invention provides a very efficient and simple construction and arrangement of such apparatus, one electrode only being arranged in each non-conducting partition in such manner that each two adjoining electrodes are arranged in step-like formation and project on either side from the non-conducting partitions, the electrodes in the electrolytic apparatus thus forming a series of steps. Current is supplied on one side of the electrolytic apparatus to the bottom electrode in such manner that an electrode acting as an anode is always situated under one projecting portion of the next electrode acting as a cathode.

The electrolyte is supplied in such manner that the level of the liquid is only slightly above the upper electrode acting as the cathode, for the purpose of enabling the hydrogen generated to escape easily and of minimizing its reducing action. The electrodes can be made of any desired material—for instance, of platinum, carbon, or the like—in the form of plates, bars, nets, wires, or strips, the chief point being that the electrodes should be arranged above each other in step-like formation and that the bottom electrode in each step-like section should act as an anode, and the electrode above it as a cathode.

Several constructions of the apparatus according to this invention are illustrated, by way of example, in the accompanying drawings, in which—

Figure 1 shows an electrolytic apparatus in vertical longitudinal section. Fig. 2 is a vertical cross-section thereof. Fig. 3 is a par-

tial vertical longitudinal section of a modified form. Fig. 4 is a similar view of another modified form, and Fig. 5 is a transverse section of the same.

As will be seen in Fig. 1, the electrolytic apparatus *a* is divided by a number of non-conducting partitions *b b' b² b³ b⁴*, &c., into separate compartments *c c' c² c³ c⁴*, &c., and the electrodes *d* are mounted, in a watertight manner crosswise of the non-conducting partitions *b'*. One electrode is arranged in each non-conducting partition, the electrode in the partition *b'* being at a slightly higher level than the electrode in the partition *b*, and so on, so that the electrodes appear in the form of steps. The current is supplied to the lowest left-hand electrode *d* acting as an anode, so that the half of the next electrode projecting from the partition *b'* and situated over the said lowest electrode acts as a cathode. The current goes from the left-hand half of this electrode to the right-hand half, which acts as an anode, while the portion of the next electrode above it acts as cathode. Electrolyte is supplied to each separate compartment through holes *e*, Fig. 2, in one wall *g* and is discharged at the other side through holes *f* in the other wall *g'*, so that the level of the liquid is only slightly above the electrode acting as cathode. In this way the advantage is obtained that the escape of hydrogen is facilitated and its reducing action minimized as much as possible.

In the constructions shown in Figs. 1 and 2 the electrodes are made of thin sheets of platinum, the halves acting as cathode being provided with holes *h* for the purpose of facilitating the escape of the hydrogen generated, while the halves acting as anodes are supported by a non-conducting plate *d'*, which is secured in any desired way to the non-conducting partitions.

In the construction shown in Fig. 3 the material used is graphite carbon or some other cheap material, the halves on the right-hand side of the non-conducting partitions being surrounded with an insulating protective layer *i*, to which is secured the material acting as anode—for instance, platinum—in such manner that the platinum is electrically connected with the carbon.

In the construction shown in Figs. 4 and 5 electrode-bars *k*, of any desired material—for instance, of carbon—are arranged step-wise, the material acting as anode—for instance, platinum—if desired, with the insertion of an insulating protective layer, being secured to one-half of each electrode. The supply of electrolyte to each separate compartment takes place through a hole *l*, the discharge taking place through a hole *m* in the opposite wall.

In working, the constructions shown in Figs. 3, 4, and 5 operate in the same manner as the construction shown in Figs. 1 and 2.

Having now particularly described and ascertained the nature of my said invention, I declare that what I claim is—

1. Electrolytic apparatus for the manufacture of bleaching liquor comprising compartments separated by non-conducting partitions, a single electrode arranged horizontally in each non-conducting partition and projecting on either side thereof in such manner that each two adjoining half-electrode lie horizontally one above the other forming a step-like arrangement of the electrodes, the lower electrode portion in each compartment acting as an anode and the projecting half of the next electrode situated above it acting as a cathode.

2. Electrolytic apparatus for the manu-

facture of bleaching liquor comprising a plurality of compartments at different heights and separated by non-conducting partitions, an electrode in one compartment, an electrode in an adjacent compartment projecting into the first-named compartment above the electrode therein, the part of the electrode so projecting being perforate and means for passing an electrolyte through each compartment.

3. Electrolytic apparatus for the manufacture of bleaching liquor comprising compartments separated by non-conducting partitions, a single electrode arranged horizontally in each non-conducting partition and projecting on either side thereof in such manner that each two adjoining half-electrode lie horizontally one above the other forming a step-like arrangement of the electrodes, the upper projecting half of an electrode in each compartment being perforated, the lower electrode portion in each compartment acting as an anode and the projecting half of the next electrode situated above it acting as a cathode.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

RICHARD KOTHER.

Witnesses:

PAUL E. SCHILLING,
PAUL ARRAS.