

No. 651,849.

Patented June 19, 1900.

M. HAAS.
ELECTROLYTIC APPARATUS.
(Application filed May 26, 1899.)

(No Model.)

Fig. 1.

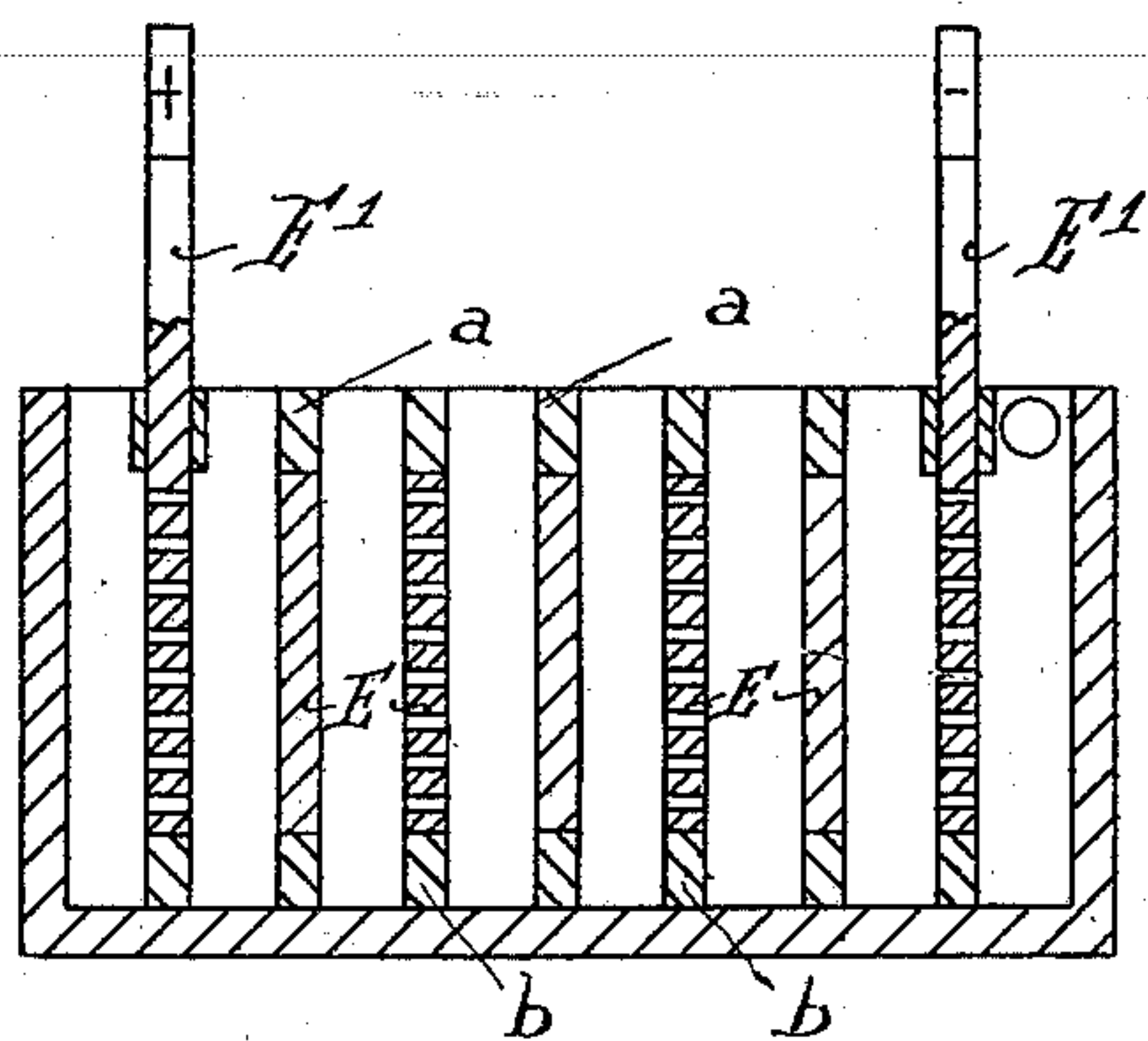


Fig. 2.

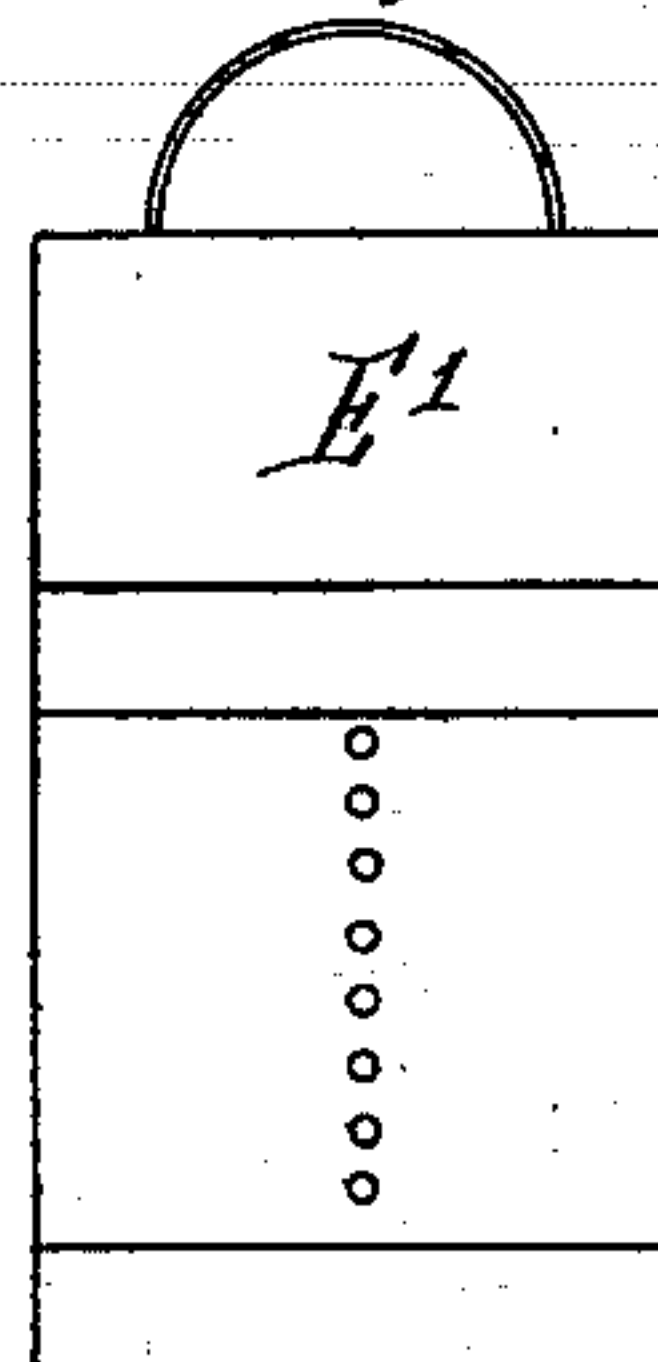


Fig. 5.

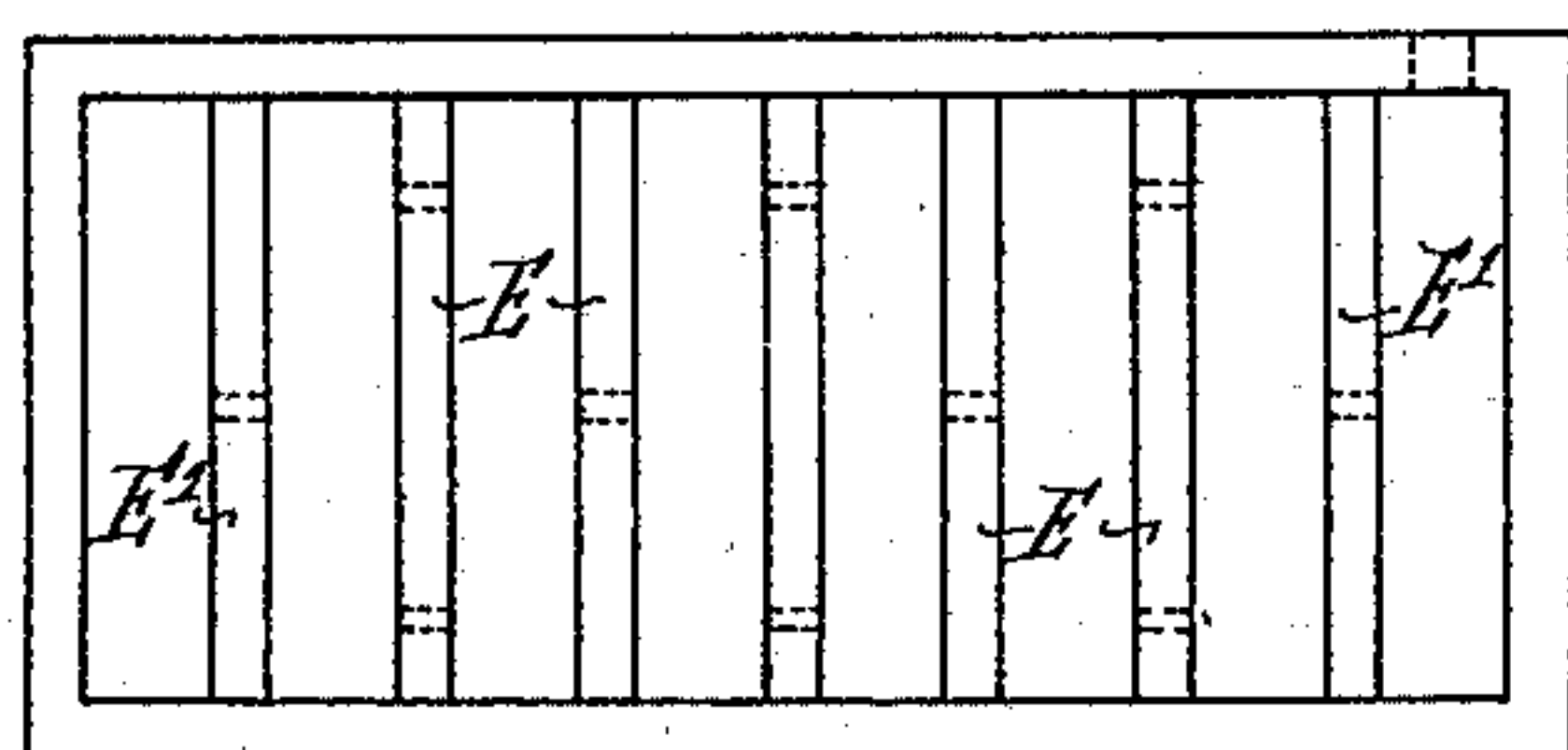


Fig. 3.

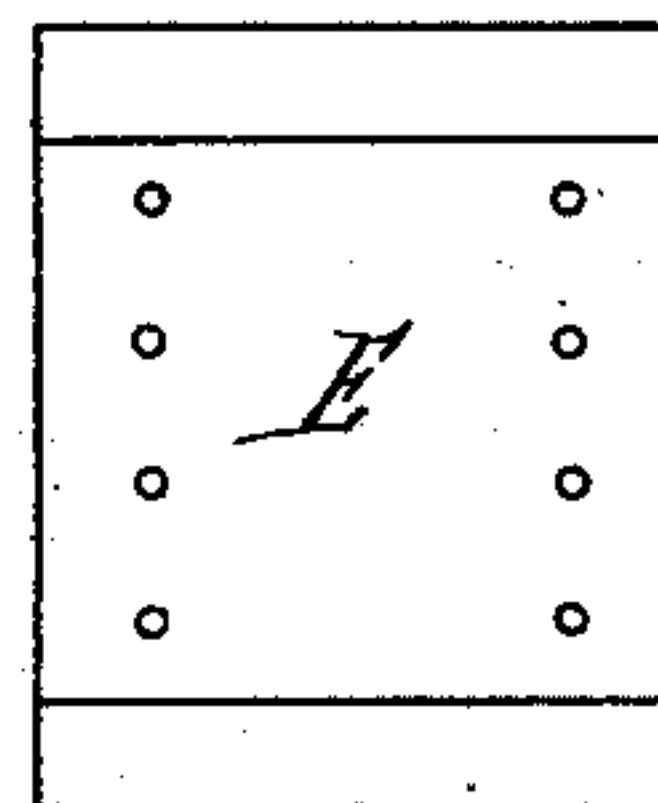


Fig. 6.

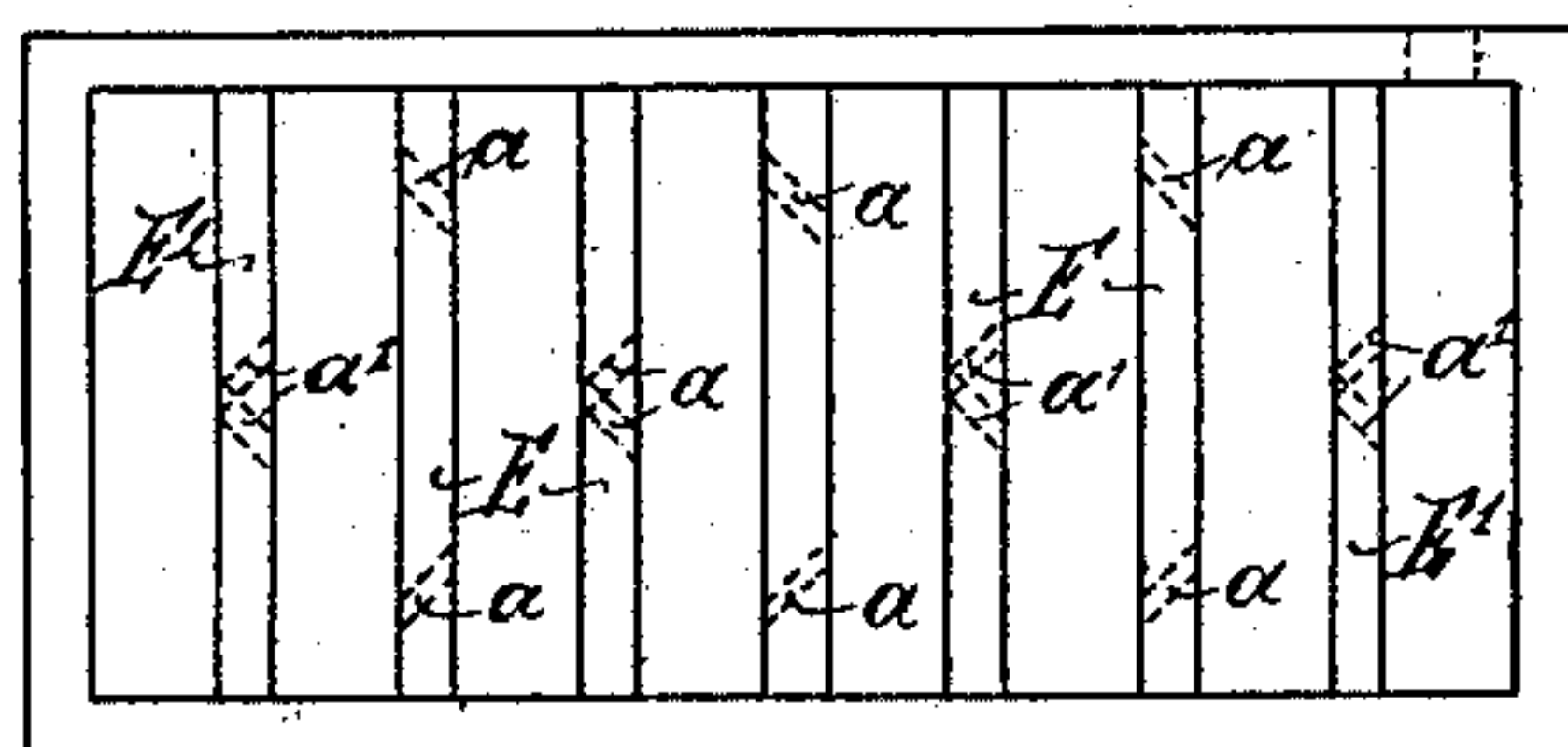
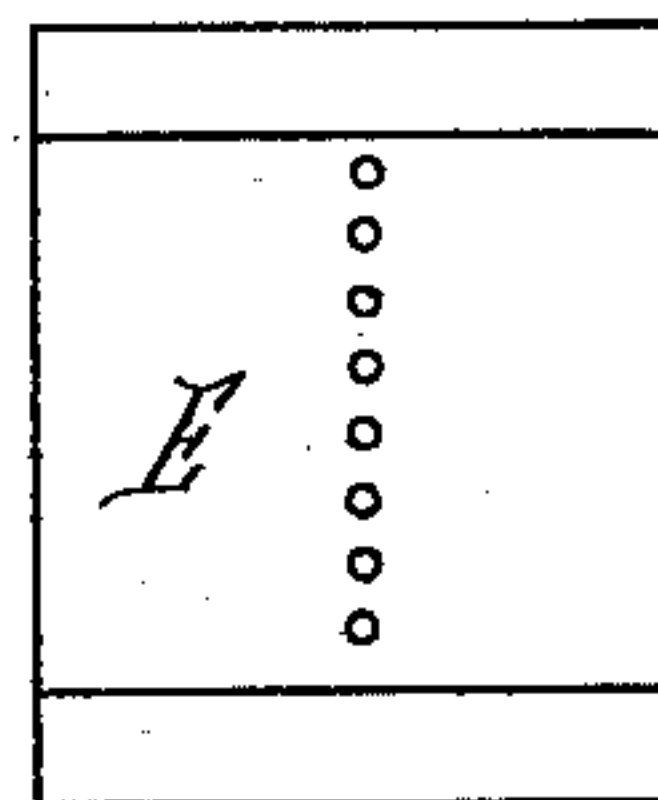


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

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ELECTROLYTIC APPARATUS.

SPECIFICATION forming part of Letters Patent No. 651,849, dated June 19, 1900.

Application filed May 26, 1899. Serial No. 718,437. (No model.)

To all whom it may concern:

Be it known that I, MAX HAAS, a subject of the King of Saxony, and a resident of Aue, in the Kingdom of Saxony, German Empire, have invented certain new and useful Improvements in Electrolytic Apparatus, of which the following is an exact specification.

The present invention relates to improvements in electrolytic apparatus, and more especially to an apparatus for the manufacture of bleaching-lye from chlorids.

The essential feature of my invention is that the liquid does not travel as hitherto in a winding path—that is to say, first over and then under the intermediate electrodes, or alternately first at the one side and then at the other side of the electrodes; but the liquid alternately is separated into two different streams and afterward united again, so that owing to the contrary streams whirls are formed, a good mixture of the circulating liquid thus being attained.

My invention will be the better understood with reference to the accompanying drawings, in which—

Figure 1 shows a longitudinal section through an apparatus according to my invention. Fig. 2 is an elevational view of an end electrode. Figs. 3 and 4 are elevational views of the different middle electrodes. Fig. 5 illustrates a horizontal section through the apparatus. Fig. 6 illustrates a horizontal section through an apparatus of modified construction.

It is advantageous to employ double-pole electrodes E, consisting of carbon or other suitable material, and to arrange the end electrodes E', containing directly the current, so that they project above the bath. As illustrated in Figs. 1 to 4, the electrodes alternately are provided with one and two vertical lines of perforations. The electrodes are secured at the top end by insulating-ribs *a* and at their bottom end by insulating ribs or supports *b*.

In order to attain an equal surface of passage through all the electrodes, it is advantageous to group the perforations so that the

number of perforations arranged on both sides of an electrode is equal to the number of perforations arranged in one vertical line upon the intermediate plates. If, for instance, the number of the perforations in electrodes, as represented in Figs. 3 and 4, is equal to $2n$, the intermediate plates are provided with n openings at each side.

A modified construction of my apparatus is illustrated in Fig. 6. In this modification the perforations *a a'* of the electrodes are arranged alternately at an angle to the longitudinal axis of the vat, the consequence hereof being that the mixing becomes very effective.

Having thus fully described the nature of my invention, what I desire to secure by Letters Patent of the United States is—

1. In an electrolytic apparatus for the manufacture of bleaching-lye from chlorids, the combination of a tank having inlet and outlet openings at its opposite ends, with double-pole electrodes provided within said tank, ribs *a* and *b* serving as top and bottom supports for said electrodes, of openings alternately arranged in the middle and at the sides of the electrodes, electric connections leading from the positive and negative end electrode, substantially and for the purpose as set forth.

2. In an electrolytic apparatus for the manufacture of bleaching-lye from chlorids, the combination of a tank having inlet and outlet openings at its opposite ends, with double-pole electrodes provided within said tank, ribs *a* and *b* serving as top and bottom supports for said electrodes, of openings alternately arranged in the middle and at the sides of the electrodes, but at an angle to the longitudinal axis of the vat, electric connections leading from the positive and negative end electrode, substantially and for the purpose as set forth.

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

MAX HAAS.

Witnesses:

ERNST BUTCH,
MAX MEICHSNER.