

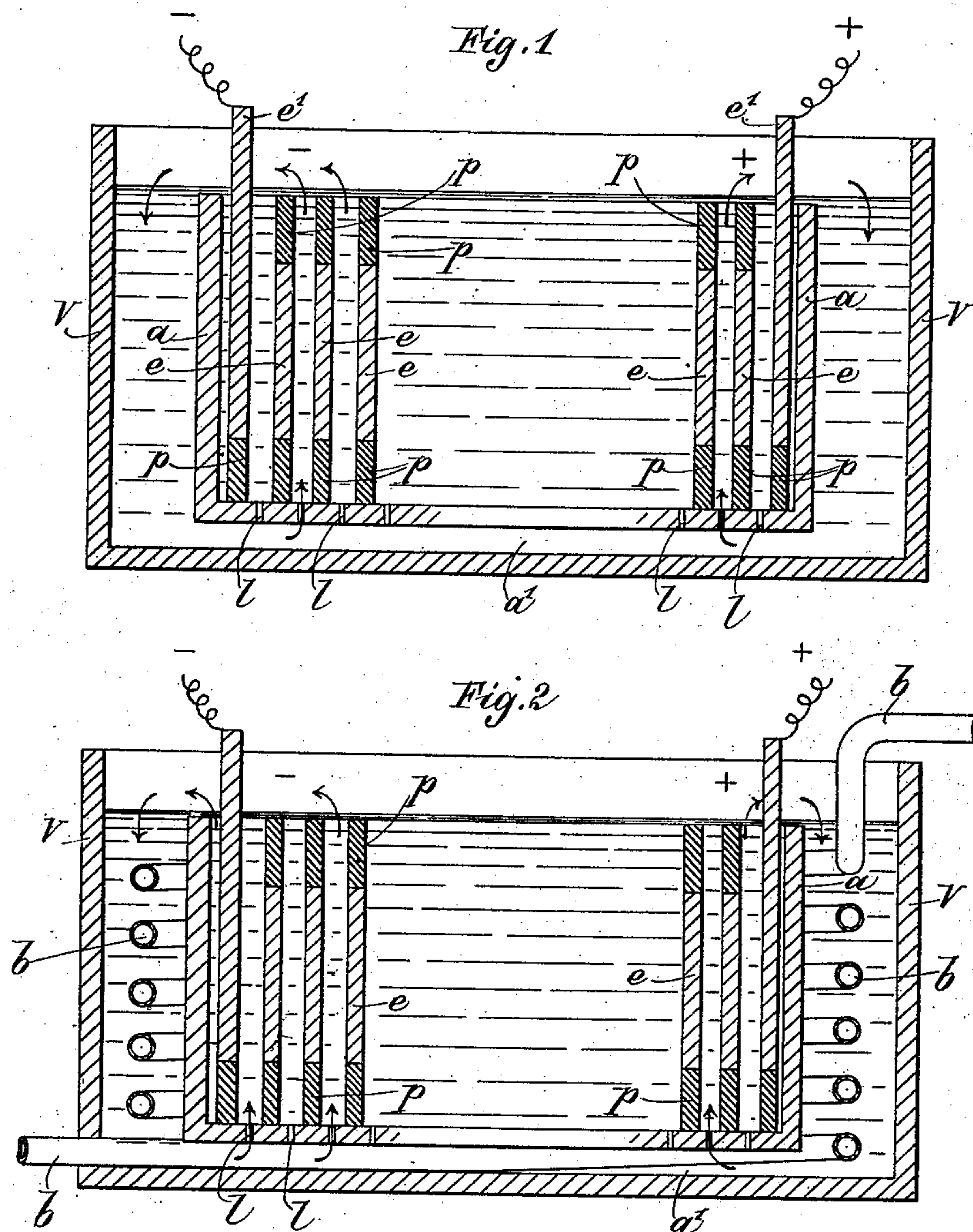
No. 685,274.

Patented Oct. 29, 1901.

M. HAAS.  
ELECTROLYTIC DECOMPOSING APPARATUS.

(Application filed June 14, 1900.)

(No Model.)



Witnesses:  
Josef Lohre  
Emil Fayser.

Inventor:  
Max Haas  
by *Hubert Kipfer*  
Attorney.



# UNITED STATES PATENT OFFICE.

MAX HAAS, OF AUE, GERMANY.

## ELECTROLYTIC DECOMPOSING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 685,274, dated October 29, 1901.

Application filed June 14, 1900. Serial No. 20,341. (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 9 Bahnhofstrasse, Aue, in the Kingdom of Saxony, German Empire, have invented a new and Improved Electrolyzing Apparatus, of which the following is an exact specification.

The present invention relates to an electrolytic decomposing apparatus employed for the production of bleaching liquor and the like.

The desired circulation speed of the liquor in the generally-employed apparatus is obtained either by a pump or by the regulation of a cock; but since the pump consumes energy and the cock ought to be controlled with regard to the sinking level of the liquor within the storage-receptacle the apparatus is disadvantageous.

The present invention having the purpose to do away with the mentioned disadvantages allows of an automatical circulation without any loss of energy and any control. This is obtained by utilizing the movement energy arising in the electrolyzing process, which energy remained hitherto unutilized.

The electrolyzer, divided in a number of compartments, is mounted in a storage vessel of the liquor in such a manner that a free space of a few inches is left between its bottom and the bottom of the storage vessel. The single compartments of this internal vessel are provided in their bottoms with apertures establishing a communication of the liquor between the contents of these compartments and the storage vessel. Instead of the apertures one or several longitudinal recesses might be arranged in the bottom of the internal vessel. The electrolyzer is arranged within the storage vessel in such a manner that its top edge terminates near the liquor-level of the storage vessel. According to the size of the latter the top edge may be located so as to exactly meet or project above or underneath the level of the liquor.

The process takes place in the following manner: As soon as the electrical current is conducted into the apparatus hydrogen gas develops in the different compartments of the internal vessel. Owing to the ascending gas-bubbles the specific weight of the contents diminishes and the liquor is carried along so

as to flow over the edge of the internal vessel into the storage vessel, as shown by the arrows. Fresh liquor enters again through the apertures of the bottom into the internal vessel, and the process repeats itself. Thus a proper automatical circulation of the liquor between the internal and external or storage vessel takes place.

In order to make my invention more clear, I refer to the accompanying drawings, in which similar characters denote similar parts throughout the different figures.

Figure 1 illustrates a vertical section of the apparatus. Fig. 2 is a vertical section of a modified form of construction.

The internal vessel  $a$  is mounted within the storage vessel  $V$  in such a manner that a free space  $a'$  is left between its bottom and the bottom of the latter. The internal vessel is provided with bipolar electrodes  $e$ , which may be insulated by plates  $p$ , and with electrodes  $e'$ , conducting a current from a certain source into the apparatus.

The apparatus works so that a control is unnecessary. The bleaching power of the desired liquor can be varied to any desired degree by the duration of the electrolyzing process. By means of the apparatus all conditions for making best use of the current are to be fulfilled. A good advantage of the improved apparatus is also that the quantity of the liquor passing in the unit time through a single compartment regulates itself automatically, according to the effect of the current produced in the same—i. e., the circulation will be weaker the weaker the development of the hydrogen gas will go on in the compartments.

The mud heaped up in the compartments can occasionally be washed away through the apertures  $l$  when emptying the apparatus. The apparatus allows also an exact regulation of the temperature of the liquor in a simple manner by inserting in the storage vessel a cooling-tube  $b$  or the like for cooling the liquor. (See Fig. 2.)

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

In an electrolyzing apparatus, the combination with an electrolyzing vessel divided

in several compartments by bipolar electrodes, of a storage vessel, the first being mounted within the latter and leaving a free space between its bottom and that of the  
5 storage vessel, the top edge of the internal vessel being located beneath the top edge of the storage vessel, apertures arranged in the bottom of the internal vessel for establishing a communication of the different compart-

ments with the outer vessel, the whole for the purpose as set forth. 10

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

MAX HAAS.

Witnesses:

GUSTAV ADOLF NÖTZLI,  
ALFRED ERNST BUSCH.