

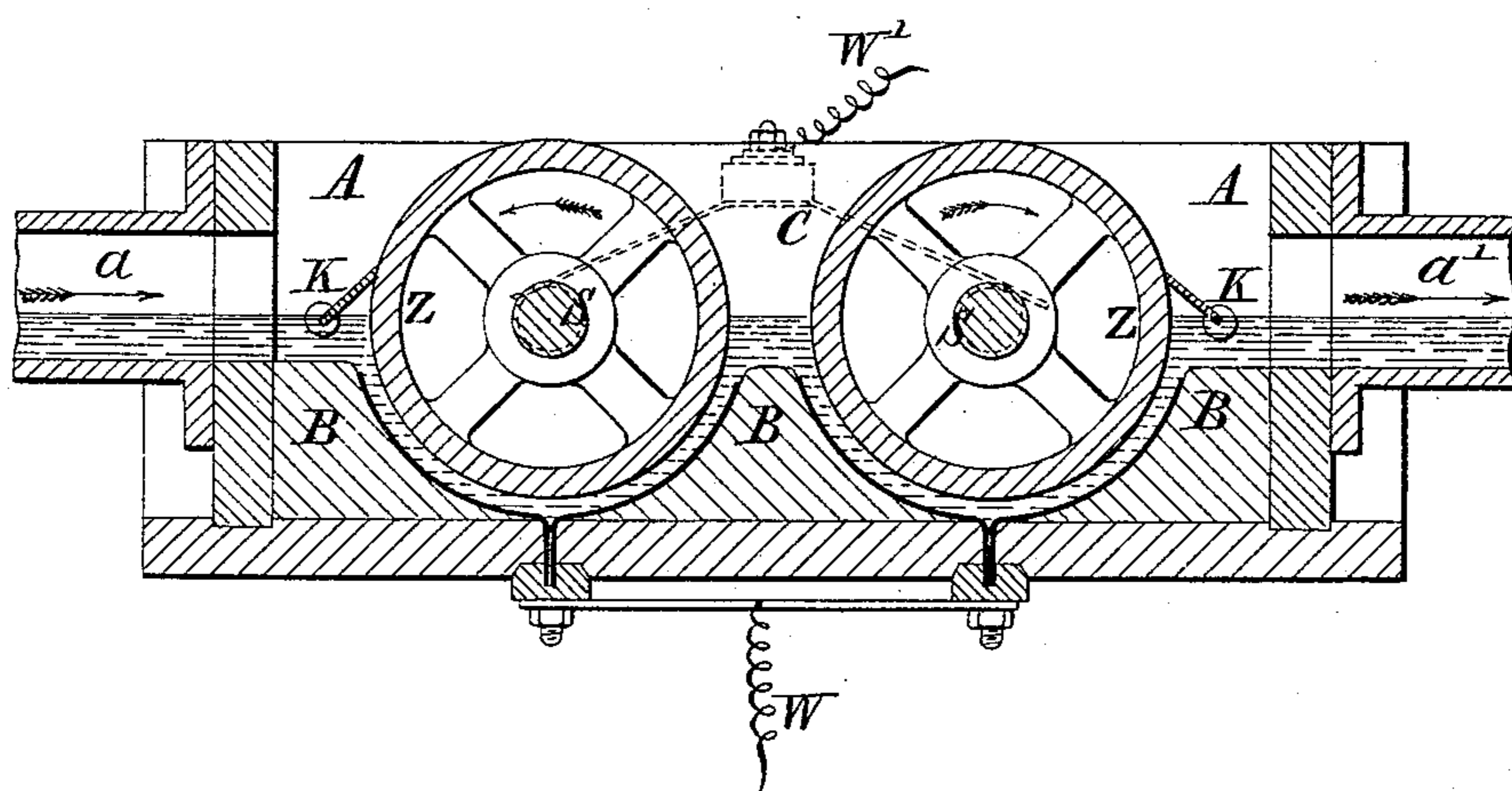
(No Model.)

E. HERMITE & C. F. COOPER.

APPARATUS FOR ELECTROLYSIS.

No. 381,372.

Patented Apr. 17, 1888.



Witnesses

*J. A. Rutherford.*  
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Inventors,

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By

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# UNITED STATES PATENT OFFICE.

EUGENE HERMITE AND CHARLES F. COOPER, OF POWNALL ROAD, DALSTON, COUNTY OF MIDDLESEX, ENGLAND, ASSIGNORS OF ONE-THIRD TO EDWARD JAMES PATERSON, OF SAME PLACE.

## APPARATUS FOR ELECTROLYSIS.

SPECIFICATION forming part of Letters Patent No. 381,372, dated April 17, 1888.

Application filed October 25, 1887. Serial No. 253,353. (No model.) Patented in England February 8, 1887, No. 1,993.

*To all whom it may concern:*

Be it known that we, EUGENE HERMITE, a citizen of the United States, and CHARLES FRIEND COOPER, a citizen of England, both residing at Pownall Road, Dalston, in the county of Middlesex, England, have invented a new and useful Apparatus for Electrolyzing Bleaching and Disinfecting Solutions, of which the following is a specification, and for which we have received British Patent No. 1,993, dated February 8, 1887.

It is found that certain solutions, especially chlorides, when electrolyzed by the passage of electrical currents through them, have their efficiency as bleaching and disinfecting agents greatly enhanced, and therefore such solutions, instead of being retained after becoming comparatively inert in the tank or vessel in which they act, are made to circulate from such tank or vessel to and through the electrolyzing apparatus, and, being thus rendered active, are sent back to the tank or vessel to act again, and so on continuously.

Our invention relates to electrolyzing apparatus for this purpose constructed and arranged as we shall describe, referring to the accompanying drawing, which is a longitudinal section of electrolyzing apparatus according to our invention.

A is a tank or trough, preferably made of insulating material; but it might be of metal with suitable insulation for the platinum electrodes which are fixed in it.

$a$  and  $a'$  are the passages, respectively, for the inflow of the solution from the tank or vessel in which it acts for bleaching or disinfecting and for its outflow in an electrolyzed condition back to the tank or vessel.

In the trough A we fix several concave or trough-shaped electrodes, B. Two of these are shown; but there may be a greater number. Each electrode B is a bent sheet of platinum or of metal plate or casting faced internally

with platinum plated or deposited on it. All these electrodes are connected by a conductor, W, to one terminal of a dynamo-electric machine or other source of electricity. Centrally above each electrode is a shaft, S, journaled in stuffing-boxes in the sides of the trough A, and carrying a zinc cylinder, Z, of a little less diameter than the concave or trough B below it, so that between each zinc cylinder and the platinum electrode below it there is a thin semi-annular passage for the liquid.

Outside the trough A conducting-brushes C are arranged to bear tangentially against the shafts S, and these brushes are connected by a conductor, W', to the other terminal of the dynamo-machine or other electrical generator.

Knives or scrapers K, fixed in the trough A, bear lightly against the surfaces of the zinc cylinders Z. The cylinders, being caused to revolve by any suitable power applied to their shafts S, have their surfaces kept clean by the knives K, and while the solution flows through the trough from  $a$  between the zinc electrodes Z and the platinum electrodes B it becomes electrolyzed by the passage of electricity through it and returns by the passage  $a'$  to the tank.

Although in what precedes we have mentioned platinum or platinized surfaces as being suitable for the one electrode or set of electrodes in the apparatus, there are cases in which material cheaper than platinum can be employed, especially when it has only to transmit a moderate current of electricity. In such cases we use pure plumbago, either natural plumbago cut to the desired form or plumbago compressed to the form required, or glass, ceramic ware, vulcanite, or other inert non-conducting material faced with plumbago. When plumbago is used for forming the conducting facing, it should be carefully purified by boiling it in hydrochloric acid, while chlorate of potash is added in small doses to the boiling mixture.

Having thus described the nature of our said invention and the best means we know of carrying it out in practice, we claim—

5 In apparatus for electrolyzing bleaching and disinfecting solutions, the combination, in a trough through which the solution flows, of concaves or troughs of platinum or its equivalent connected to one terminal of an electric generator and zinc cylinders connected to the  
10 other terminal revolving above these with scrapers bearing against them, substantially as described.

In testimony whereof we have signed our

names to this specification, in the presence of two subscribing witnesses, this 10th day of October, A. D. 1887. 15

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Witnesses:

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