H. L. TRUMBULL.

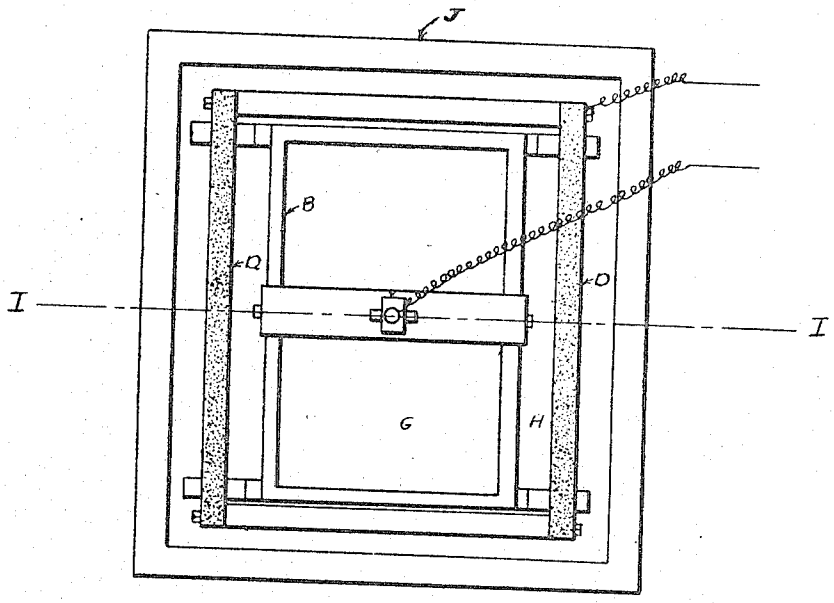
PROCESS OF PRODUCING ALKALIS FROM KELP.

APPLICATION FILED MAR. 22, 1917.

1,238,600.

Patented Aug. 28, 1917.

Fig. 1



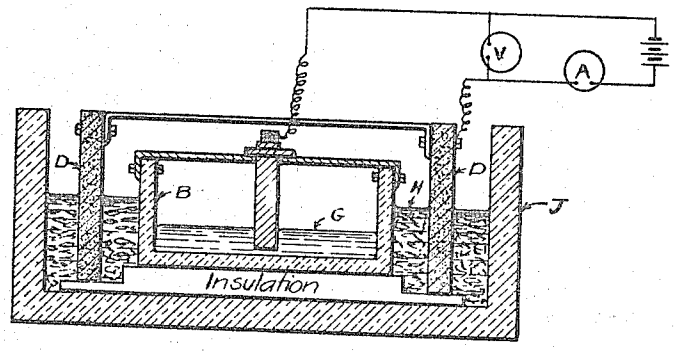


Fig. 2

Harlan L. Trumbull.

INVENTOR.

WITNESSES:

James B. Sprull.

Fred A. Few.

UNITED STATES PATENT OFFICE.

HARLAN L. TRUMBULL, OF SEATTLE, WASHINGTON.

PROCESS OF PRODUCING ALKALIS FROM KELP.

1,238,600. Specification of Letters Patent. Patented Aug. 28, 1917.

Application filed March 22, 1917. Serial No. 156,741.

To all whom it may concern:

Be it known that I, HARLAN L. TRUMBULL, citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Processes of Producing Alkalis from Kelp, of which the following is a specification.

My invention relates to a process for the production of alkalis from kelp by the employment of a method known as electrical endosmose and has for its object to afford a process whereby the referred to alkalis may be obtained more expeditiously and cheaply than hitherto. A further object is to furnish compounds of potassium more valuable than those commonly derived from kelp.

The invention consists in the novel process hereinafter described and claimed.

The apparatus by which my invention is attained, is illustrated in the accompanying drawings, in which —Figure 1— is a plan view, and —Fig. 2— is a transverse vertical section through 1—1 of Fig. 1.

In the production of alkalis from kelp according to my invention the moist kelp, which may or may not be freshly harvested, (preferably after first being ground or cut into pieces of conveniently small size) is pressed into the anode compartment of a suitable, divided-electrolytic cell wherein it makes intimate contact with and moistens a porous partition hereinafter described. The container J, may consist of any material not already attacked by chlorin.

The anode D may consist of any electrode material which is relatively inert chemically in the presence of free chlorin, such as amorphous carbon, graphite or cast magnetite.

The cathode G is of mercury and during electrolysis makes intimate contact with the above mentioned porous partition on the opposite side from the kelp indicated by H. By electrolysis mercury is converted into an amalgam of alkali metals, which amalgam is decomposed in the presence of water to furnish a solution of alkalis. This decomposition may be hastened by the use of contact agents such as graphite carbon, nickel or certain other solids. The decomposition of the amalgam may be effected either during the electrolysis or after its completion. In either case the resulting solution is a mixture of alkalis containing a high percentage of caustic potash. The alkalis may be obtained in solid form by evaporating the solution to remove water and other volatile substances.

It may be remarked that the material which is used as a partition B to separate anodic and cathodic compartments may be of any composition so long as it possesses suitable rigidity, porosity, and insolubility.

I claim as my invention:

1. The process herein described for obtaining a mixture of alkalis, consisting firstly, of electrolyzing kelp in a divided cell with a mercury cathode, with the production of alkali metal amalgams, secondly in the treatment of the amalgams so produced with water to form a solution of alkalis, and thirdly, the production of solid alkalis by the evaporation of water and other volatile materials.

2. The process of obtaining alkalis from kelp by electro-osmosis, consisting in first removing the alkali metal ions to the mercury cathode to be therein discharged to form amalgams, then decomposing the amalgams in the presence of water to produce alkalis and finally, evaporating the liquid therefrom.

3. The process of obtaining a solution from kelp by first subjecting the kelp to an electro-osmotic action employing a mercury cathode, and then treating the amalgam produced thereby with water to afford a solution of alkalis containing caustic potash.

Signed at Seattle, Washington, this 17th day of March, 1917.

HARLAN L. TRUMBULL.

Witnesses:

PIERRE BARNES,

W. W. MONTGOMERY,

Correction in Letters Patent No. 1,238,600.

It is hereby certified that in Letters Patent No. 1,238,600, granted August 28, 1917, upon the application of Harlan L. Trumbull, of Seattle, Washington, for an improvement in "Processes of Producing Alkalis From Kelp," an error appears in the printed specification requiring correction as follows: Line 36, for the word "already" read *readily;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 20th day of November, A. D., 1917.

[SEAL.] R. F. WHITEHEAD,

Acting Commissioner of Patents.

Cl. 204—9.