

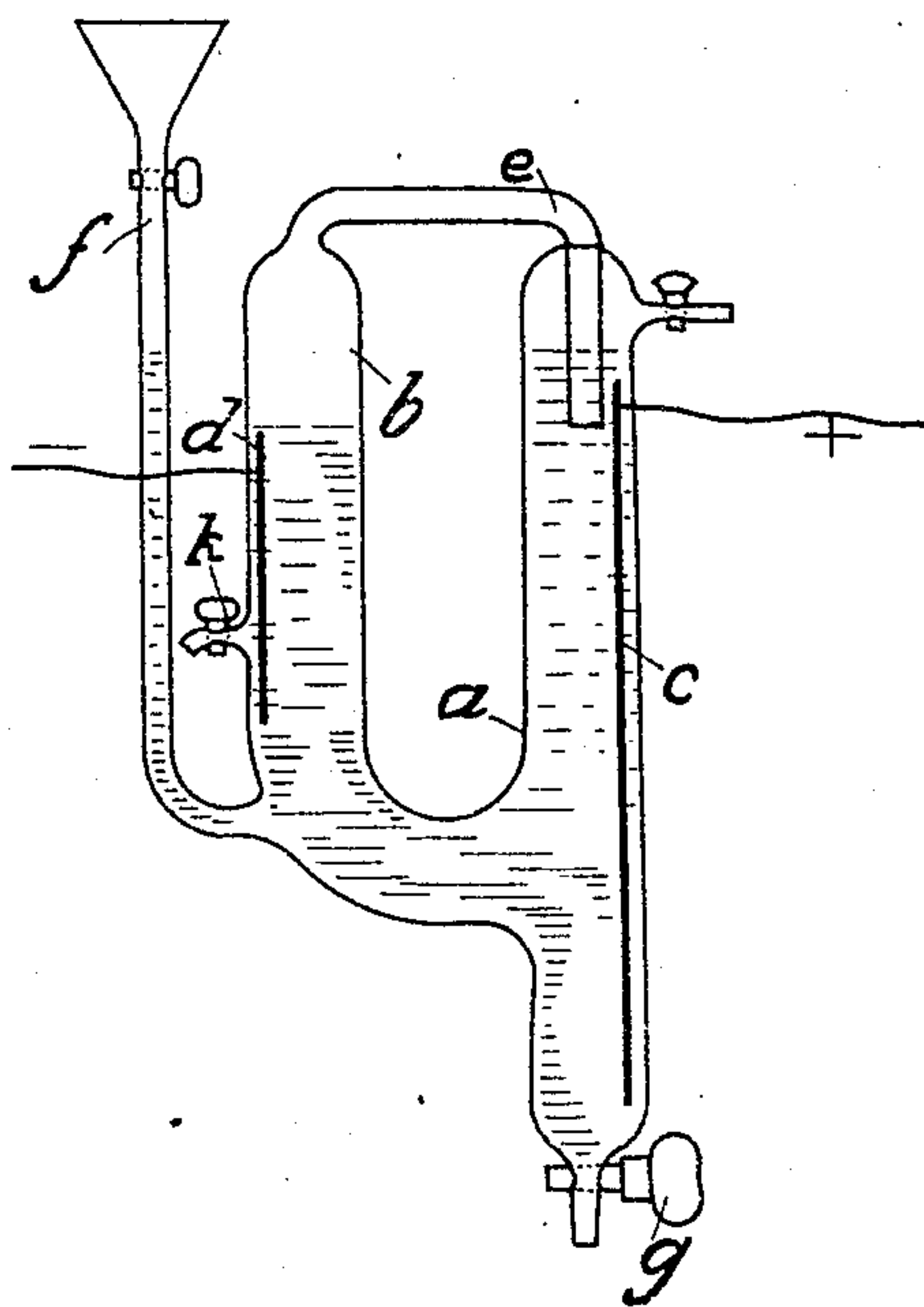
No. 898,390.

PATENTED SEPT. 8, 1908.

H. PAULING.

PROCESS OF CONCENTRATING NITROSULFURIC WASTE ACID.

APPLICATION FILED JULY 29, 1907.



Witnesses:

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PROCESS OF CONCENTRATING NITROSULFURIC WASTE ACID.

No. 898,390.

Specification of Letters Patent.

Patented Sept. 8, 1908.

Original application filed August 13, 1906, Serial No. 330,387. Divided and this application filed July 29, 1907.
Serial No. 386,072.

To all whom it may concern:

Be it known that I, HARRY PAULING, a subject of the German Emperor, and resident of 84 Wilhelmstrasse, in Gelsenkirchen IV, in the Province of Westphalia, Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Processes of Concentrating Nitrosulfuric Waste Acid, of which the following is a specification.

There is a sort of waste acid resulting in the manufacture of explosive substances and like processes connected with nitrifications, such waste acid consisting of a mixture of diluted sulfuric acid with diluted nitric acid.

This waste acid is the remainder of the so-called nitrosulfuric acid used in effecting the said nitrifying processes, the acid being at the beginning of such operations concentrated, but suffering a loss in nitric acid while at the same time it receives an addition of water.

The present invention consists in a process that shall enable a ready concentration or regeneration of the diluted nitric acid contained in such waste acid, so as to render it reusable for nitrifications or the like.

To such end the waste acid is electrolyzed in company with diluted nitric acid, in a peculiar manner, as will be understood from the following description and be particularly pointed out in the appended claim, reference being had to the accompanying drawing which is a diagrammatical view of an apparatus adapted for effecting my process.

The apparatus represented consists, in substance, of a U-tube *a*, *b*, a cross tube *e* establishing communication between the two legs thereof, and in such a manner that one end of this tube extends into the interior of

the leg *a*, as shown; a feed tube *f*, and drain cocks *g* and *k*. *c* is the anode and *d* the cathode.

The operation of this device is as follows: The waste acid is filled into the leg *a* so as to surround the anode, while the leg *b* is supplied with diluted nitric acid, which will thus be in contact with the cathode. Hereupon an electric current is passed through the liquid, with the result that at the anode *c* oxygen is formed, while at the cathode *d* nitric oxids are generated. The latter pass through the tube *e* into the leg *a*, where they dissolve in the diluted nitric acid surrounding the anode, so as to be converted into nitric acid by the action of the oxygen set free at the anode. After a suitable or desired degree of concentration has been obtained in the leg *a* the diluted nitric acid contained in the leg *b* is discharged through a cock *k*. This acid, which still contains a certain amount of nitric oxids, is thus separated from the oxidized concentrated one.

What I claim is:

The herein described process for concentrating nitric acid consisting in filling the anode partition of a suitable electrolyzer, with nitro-sulfuric acid, and the cathode partition with diluted nitric acid, and then electrolyzing such liquid, and conducting the nitrogen oxids liberated at the cathode into the anode chamber.

In witness whereof I have hereunto signed my name this 22 day of June 1907, in the presence of two subscribing witnesses.

HARRY PAULING.

Witnesses:

CARL HEINRICH,
RICHARD STERKEL.