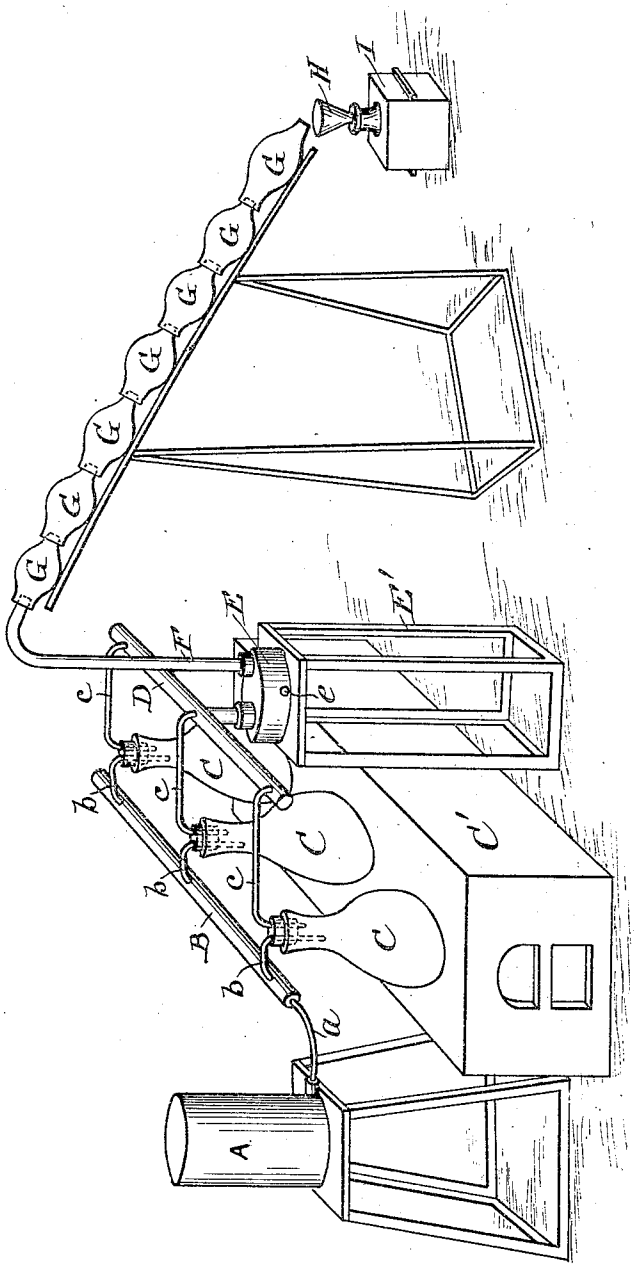
No. 875,558. PATENTED DEC. 31, 1907.

L. B. SKINNER.

PROCESS OF PURIFYING HYDROCHLORIC ACID.

APPLICATION FILED APR. 11, 1906.




Witnesses:
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# UNITED STATES PATENT OFFICE.

LEWIS B. SKINNER, OF DENVER, COLORADO.

## PROCESS OF PURIFYING HYDROCHLORIC ACID.

No. 875,558. Specification of Letters Patent. Patented Dec. 31, 1907.

Application filed April 11, 1906. Serial No. 311,097.

*To all whom it may concern:*

Be it known that I, LEWIS B. SKINNER, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Processes of Purifying Commercial Hydrochloric Acid, of which the following is a specification.

This invention relates to processes for purifying the water solution of hydrochloric acid (HCl) or muriatic acid by distillation.

The object of the improvement is to provide means for producing what is commercially known as strictly chemically pure hydrochloric acid as distinguished from what is known as chemically pure acid for pharmaceutical purposes, which is not strictly chemically pure.

I attain this object by the process hereinafter described and claimed.

The accompanying drawing is a perspective view in outline of an apparatus by means of which the process may be carried out.

In said drawing A is an earthenware vessel to hold the impure commercial acid containing free chlorin.

B is a manifold into which the acid from the vessel passes through an acid resisting tube *a*.

C C are boiling flasks set on a stove or furnace C'.

D is a manifold into which the fumes pass through tubes *c* from the flasks C and thence on to a closed pot E which is adapted to catch any solid impurities which may be carried over with the vapors. From the pot E the gases pass up through the tube F to the condensers G and from them the acid runs down through a funnel H into a carboy or other receiver I. It is then treated with hydrocarbon gas by passing the gas into or allowing it to bubble through the acid.

I use a vessel of earthenware to hold the impure commercial acid which contains free chlorin. The mixture is made to pass from the vessel through an acid resisting tube into a boiling flask to which heat is applied for producing evaporation. The vapors are passed from the boiling flask to a closed pot adapted to catch by gravitation or otherwise any solid impurities which may have been carried over with the vapors. This pot besides catching the solid impurities, gives the chlorin vapor further opportunity of acting with the hydrochloric acid vapor outside the boiling flask. From the pot the gases are made to pass upward through a tube and thence on and downward through a condenser or condensers into a carboy or other suitable receptacle. With this treatment no ferric chlorid passes to the condenser. The distillate is then treated with hydrocarbon gas, or a mixture of such gas with other inert gases, by passing such gas or mixture into or bubbling it through the same.

By the first step described above the distillation of the commercial acid mixed with free chlorin purifies the distillate of all impurities except the free chlorin itself the vapors of which pass along with and partially or wholly condense with the hydrochloric vapors, and by treating the distillate with a hydrocarbon gas as a second step of the process the free chlorin is removed. Any hydrocarbon gas which has a reducing effect to chlorin and is free from contaminating substances may be used to effect the result. I prefer to use acetylene ($C_2H_2$) for this purpose.

The second step in the process consists in passing such gas into or allowing it to bubble through the distillate. Any suitable apparatus may be used to carry out the process.

What I claim is:

1. The process of purifying commercial hydrochloric acid mixed with free chlorin which consists in distilling the mixture and then reacting on the distillate with hydrocarbon gas, as specified.

2. The process of purifying commercial hydrochloric acid mixed with free chlorin which consists in evaporating the mixture in a boiling flask, collecting the vapors in a closed pot, passing them on from the pot against gravity and condensing them, as specified.

LEWIS B. SKINNER.

Witnesses:
HENRY N. BENNETT, Jr.,
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