

# UNITED STATES PATENT OFFICE.

ANDRÉ BELTZER, OF BRIDGEPORT, CONNECTICUT.

## METHOD OF GENERATING OXYGEN.

968,528.

Specification of Letters Patent. Patented Aug. 30, 1910.

No Drawing.

Application filed January 10, 1908. Serial No. 410,070.

*To all whom it may concern:*

Be it known that I, ANDRÉ BELTZER, citizen of Republic of France, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Methods of Generating Oxygen; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improved method of generating oxygen gas.

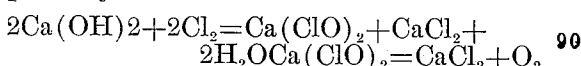
The object of the invention is to produce a method of generating oxygen by means of simple and portable apparatus without the employment of excessive temperatures, and by which the gas may be generated at a substantially uniform rate, and of great purity. Oxygen so generated is especially useful in oxyacetylene welding.

To this end the method consists in the method hereinafter described and particularly defined in the claims.

An excellent method of carrying out the present invention is as follows:—In the first place, a pulverulent mixture is produced which is stable and not dangerous for storage or transportation. This mixture consists of 66⅔% by weight of the commercial bleaching powder, and 33⅓% by weight of slaked lime. This mixture will be placed in any suitable retort and heated to a temperature not exceeding 300° C. The mixture begins to give off oxygen gas at a temperature of 120° C. The generation of the gas is slow and comparatively uniform, and it is quite devoid of chlorin, which is particularly objectionable when the gas is used in welding, as it is exceedingly offensive to the operator. It is also objectionable for the reason that it attacks the vessels used to contain it. The mixture is more stable than calcium carbide and less liable to deterioration, is absolutely innocuous even if wet, and it does not deteriorate rapidly. It is also cheap and easily obtained. The especial adaptability of this mixture to the use of generating oxygen gas used in welding follows from the fact that it may be mixed by the chemist and shipped in bulk to the consumer, who need not concern himself about its constituents any more than the coal consumer does about the quality of coal which he burns in his furnace.

The bleaching powder used in making the mixture is ordinary commercial bleaching powder. The slaked lime should have a slight excess of water in it. It is preferably made by adding to the burnt lime a little more than the theoretical quantity of water. The mixture is then left until it is thoroughly slaked. It is then sifted to remove nodules of any unburnt limestone. This slaked lime should be in a dry and pulverulent state, and it is preferred that it should contain 7% more water than slaked lime dried to 100° centigrade.

It has long been known that if a concentrated solution of bleaching powder is heated it gives off oxygen and the remaining mass is largely calcium chlorid. This oxygen, however, contains considerable quantities of chlorin gas. The gist of the present invention consists in the discovery that by mixing slaked lime with the bleaching powder, while the evolution of the oxygen is not impeded, the evolution of chlorin gas is to all intents and purposes entirely eliminated. The exact reason for this is not precisely understood, but it is believed that the slaked lime is attacked by the chlorin and produces calcium hypochlorite and calcium chlorid and water. The hypochlorite under the action of heat is again split up into calcium chlorid and oxygen. The formula for this operation is probably as follows:



The present invention is not limited to the specific process hereinbefore described but comprehends broadly the method of generating oxygen defined in the claims.

In some of the claims the expression "chlor-oxygen salt" is employed to define "a hypochlorite, or chlorate, or perchlorate," and it will be understood that the claims mean the same thing as if those words were substituted for the unitary expression used therein, namely, "chlor-oxygen salt."

The temperatures and exact proportions of ingredients are those which experience has found to be the best suited for the purpose, but it is to be understood that while these temperatures and proportions are those calculated to give the best results, the invention is not specifically limited thereto, as some considerable departure may be made from the exact proportions and temperatures without sacrificing the spirit of the in-

vention, which resides in the use of slaked lime to prevent the presence of chlorin in the gas generated.

Having thus described the invention, what is claimed is:—

1. The method of generating oxygen which consists in heating a mixture of  $66\frac{2}{3}\%$  by weight of bleaching powder and  $33\frac{1}{3}\%$  by weight of slaked lime to a temperature of approximately  $300^{\circ}\text{C}$ ., substantially as described.

2. A composition of matter for use in generating oxygen consisting of a mixture of not more than  $66\frac{2}{3}\%$  by weight of chlorin-oxygen compounds, capable of giving off oxygen when heated, and not less than  $33\frac{1}{3}\%$  by weight of an alkali-earth hydrate, substantially as described.

3. A composition of matter for use in generating oxygen consisting of a mixture of  $66\frac{2}{3}\%$  by weight of bleaching powder and  $33\frac{1}{3}\%$  by weight of slaked lime, substantially as described.

4. The method of generating oxygen which

consists in heating a mixture of not more than  $66\frac{2}{3}\%$  by weight of chlorin-oxygen compounds, capable of giving off oxygen when heated, and not less than  $33\frac{1}{3}\%$  by weight of an alkali-earth hydrate, substantially as described.

5. The method of generating oxygen which consists in heating a mixture of not more than  $66\frac{2}{3}\%$  by weight of chlor-oxygen salt and not less than  $33\frac{1}{3}\%$  by weight of an alkali-earth hydrate, substantially as described.

6. The method of generating oxygen which consists in heating a pulverulent mixture of not more than  $66\frac{2}{3}\%$  by weight of bleaching powder and not less than  $33\frac{1}{3}\%$  by weight of slaked lime, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses.

ANDRÉ BELTZER.

Witnesses:

ROBERT D. SAMMIS,  
ROBERT C. SEELEY.