UNITED STATES PATENT OFFICE.

CARL JOH. EUGEN DE HAËN, OF LIST, NEAR HANOVER, GERMANY.

PROCESS OF BLEACHING.

SPECIFICATION forming part of Letters Patent No. 482,477, dated September 13, 1892.

Application filed March 18, 1892. Serial No. 425,458. (No specimens.)

To all whom it may concern:

Be it known that I, CARL JOHANN EUGEN DE HAËN, a subject of the King of Prussia, residing at List, near Hanover, in the Kingdom of Prussia, Germany, have invented new and useful Improvements in Bleaching Processes, of which the following is a specification.

This invention relates to an improved process for bleaching vegetable and animal textile fibers or other organic substances, such as feathers, hairs, ivory, bones, sponges, bristles, leather, and the like.

Since chemistry has succeeded in producing metallic sodium from common salt by electricity, and very cheaply, greater attention has been paid to the manufacture of sodium compounds, which can only be produced from sodium in the metallic state. The manufacture of peroxide of sodium has primarily occupied chemists, and after long and tedious experiments excellent results have been obtained. Peroxide of sodium has thus been introduced into technical art as a new oxidizing agent, and the object of the present invention is to utilize it as a very effective and desirable bleaching agent.

The simplest way to employ the peroxide of sodium consists in introducing the salt into a diluted acid solution and in producing by this means peroxide of hydrogen. It has been discovered, however, that although the solution of peroxide of hydrogen so obtained, and which contains the corresponding quantity of sodium-salt, does bleach, it affects the bleached stuff in such a manner that the latter looses its luster and obtains a hard touch. The effect is quite different when peroxide of sodium is gradually decomposed by salts the oxides of which are capable of being precipitated by sodium, and the use of magnesia salts has been found particularly suitable for this purpose.

The bleaching process is carried out in the following manner: The necessary quantity of peroxide of sodium is added to a bath heated to a temperature of 50° centigrade and containing magnesia salts, such as sulphite of magnesia, magnesium chloride, &c. A gradual precipitation of magnesium hydrate will take place, while the oxygen of the peroxide of sodium becomes free for the bleaching process. Immediately after the addition of the sodium the material to be bleached is introduced into the bath and treated during about ten minutes at a temperature of about 50° centigrade. A fresh quantity of peroxide of sodium is then added, and thus the process is continued until the desired result has been obtained.

A perfect and beautiful bleaching of Tussah silk may be obtained in one and one-half hours, and for such an operation a quantity of peroxide of sodium equal to about twenty to thirty per cent. of the weight of the material to be bleached is required, so that at the present price of peroxide of sodium the cost of the new process is already below that of bleaching by other agents. In course of time the price of peroxide of sodium will probably become cheaper yet and be reduced perhaps to half its present value, so that the peroxide of sodium so far as it has to compete with peroxide of hydrogen and of barium will become the cheapest bleaching agent. A further reduction of the price is not impossible, so that peroxide of sodium could then successfully compete with chlorine and sulphurous acid.

As particular advantages of the new bleaching process in comparison with the use of peroxide of hydrogen may be pointed out, first, the quickness of the bleaching action; second, the excellent luster and touch of the bleached goods; third, the strength of the fiber, which is not affected by the bleaching process.

In place of magnesium salts I may use calcium, aluminum, barium, strontium, zinc, or similar salts which contain oxides capable of being precipitated by sodium hydrate or carbonate. Carbonic acid is added during the bleaching to those salts the oxides of which are soluble as hydrates but insoluble as carbonates.

What I claim is—

1. The process of bleaching, which consists in subjecting the goods to be treated to a bath of peroxide of sodium, and a salt containing an oxide capable of being precipitated by sodium, such as sulphite of magne-

sia or magnesium chloride, substantially as specified.

2. The process of bleaching, which consists in subjecting the goods to be treated to a bath of peroxide of sodium and magnesium salts, such as magnesium chloride, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL JOH. EUGEN DE HAËN.

Witnesses:

H. L. KAUFMANN,

ARTHUR BARTH.