# UNITED STATES PATENT OFFICE.

PAUL CHARLES DAME AND LÉON PRUD'HON, OF PARIS, FRANCE.

## METHOD OF MAKING ARTIFICIAL WHALEBONE.

SPECIFICATION forming part of Letters Patent No. 501,222, dated July 11, 1893.

Application filed November 18, 1892. Serial No. 452,445. (No specimens.) Patented in France June 25, 1892, No. 222,594, and in Belgium June 27, 1892, No. 100,292.

*To all whom it may concern:*

Be it known that we, PAUL CHARLES DAME and LÉON PRUD'HON, citizens of the French Republic, residing at Paris, France, have invented certain new and useful Improvements in Methods of Making Artificial Whalebone, of which the following is a specification.

This invention has been patented in France June 25, 1892, No. 222,594, and in Belgium June 27, 1892, No. 100,292.

Although it is possible by our process to manufacture whalebone with every albuminous animal matter either filamentoid or horny, we prefer taking horse hair or animal hair to make the same.

We proceed as follows: We take horse hair, well washed and free of all fatty substances and we dip it in a more or less concentrated bath of lime and potash consisting generally of two parts of potash, one part of lime and one part of water, that weight being very convenient. When the bath is hot it attacks the hair quickly, when it is cold or less concentrated its action is slower. Under this action every hair is attacked at its periphery; sulphide of potassium, sulphide of calcium, phosphate of potassium, phosphate of lime and proteine are formed. The horse hair becomes soft. As soon as the action is deemed to be sufficient the horse hair is taken out and plunged into a tub of running water, by this process it is freed of the excess of lime, of potash and of the soluble salts which have been formed and there remains around the same, proteine in solution in an alkaline liquid. The hair is then immersed in diluted acetic acid which causes acetate of potash and acetate of lime, which precipitate to the bottom, and as the acetic acid precipitates the proteine instantaneously the latter is fixed round each hair. The sheets of hair thus obtained, the hairs being arranged parallel or not, are then placed, after a previous drying of more or less duration, in a mold; a convenient number of the same are superimposed, according to the thickness which is required for the whalebone, they are then submitted to a strong hydraulic pressure varying between two hundred and two hundred and eighty kilograms per square centimeter and to a rolling between cylinders, heated according to the required degree. They are afterward dried under pressure in a drying chamber and the whale bone is formed which is identical with the natural bone produced by the animal; the compression and the drying can take place simultaneously by means of a hydraulic press adapted for that purpose. It is also possible to proceed by letting the prepared horse hairs dry completely and then heating them to a degree of temperature where the proteine softens and causes the soldering of the hairs.

The hairs can be prepared in a string or not, but the best way is to arrange them parallel and in the shape of a sheet, in a frame by which their extremities are kept well pressed. These sheets we superimpose the one above the other in the molds, while the hair is still soft, in order to obtain the desired thickness of the whale bone.

The horse hairs or other hairs can be of any nature, of any production and of any color; by mixing the tints conveniently, we obtain not only the quality of homogeneity and elasticity, but even the appearance of the natural whale bone. We can even proceed by the indicated means with horn and wool.

We claim—

The herein described process of forming artificial whale bone from animal hair consisting in subjecting the same to a softening bath then immersing the material in a bath of acetic acid and finally subjecting the mass to pressure, substantially as described.

In witness whereof we have hereunto set our hands in the presence of two witnesses.

PAUL CHARLES DAME.
LÉON PRUD'HON.

Witnesses:
ROBT. M. HOOPER,
CH. CASALONGA.