

# UNITED STATES PATENT OFFICE.

FRIEDRICH LEHNER, OF ZURICH, SWITZERLAND, ASSIGNOR TO VEREINIGTE KUNSTSEIDE-FABRIKEN, A. G., OF FRANKFORT-ON-THE-MAIN, GERMANY.

## PROCESS OF MANUFACTURING ARTIFICIAL HORSEHAIR.

SPECIFICATION forming part of Letters Patent No. 680,719, dated August 20, 1901.

Application filed October 13, 1900. Serial No. 92,945. (No specimens.)

*To all whom it may concern:*

Be it known that I, FRIEDRICH LEHNER, a citizen of Germany, residing at Zurich, Switzerland, have invented certain new and useful Improvements in Processes of Manufacturing Artificial Horsehair; 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.

My invention relates to the preparation of artificial animal fiber from vegetable or mixed vegetable and animal fiber; and the object of the same is to prepare a fiber which is to take the place of natural horsehair.

In carrying out my invention I start with the well-known solutions or emulsions of cellulose, nitrocellulose, pyroxylin, alone or mixed, and in general with solutions or baths of cellulose derivatives, which, as is well known, are adapted to be spun or drawn out into a continuous thread in a precipitating bath or liquid or in the air. Such solutions of cellulose derivatives, pure or mixed, have been described, for example, in United States Patents No. 394,559, of December 18, 1888, and No. 531,158, of December 18, 1894, to De Chardonnet; No. 571,530, of November 17, 1896, to Langans; No. 559,392, of May 5, 1896, and No. 562,626, of June 23, 1896, to myself, and other patents and publications.

As is known, natural horsehair consists of a rather thick untwisted and solid thread. If now it is attempted to make a fictitious horsehair thread from the above materials by causing nitrocellulose or other solution to be drawn through an orifice corresponding to the thickness of natural horsehair, an allowance being made for the shrinkage of the thread on solidifying, it will be found that such thread will be very brittle and will possess little tensile strength. It will be impossible to tie such a thread or to join a number of such threads, since they will tear or rupture at the points of connection with extreme facility. It is the object of my invention to overcome this great defect, and for this

purpose my invention consists in concurrently drawing out a plurality of threads from the solution and then uniting the threads while they still are capable of running together and merging into each other.

I will now describe in detail what I consider the preferred method of carrying my invention into effect.

I take any well-known nitrocellulose, pyroxylin, or other solution of a cellulose derivative—such as set forth, for example, in the patents above mentioned—and I draw a number (two or more) of thin threads from such solutions through suitable orifices or otherwise through a congealing or precipitating bath or into the air, the aggregate thickness of such thin threads being such as to form together a thread of the thickness of horsehair. The component threads are then allowed to run together and merge into a single thread, while they have still sufficient fluidity to so combine. This combination of the threads I have found must take place very shortly after they have left the solution or spinning orifice, as otherwise they would not completely merge into each other to form an integral single thread. The artificial horsehair thread so obtained may then be treated in the manner well known for such fibers, and according to the starting material employed is subsequently denitrated, dyed, &c., and will then serve as a perfect substitute for natural horsehair.

What I claim, and desire to secure by Letters Patent of the United States, is—

The process of preparing artificial horsehair which consists in drawing a plurality of threads from a bath of cellulose or cellulose derivative and uniting such threads while they are yet capable of merging into a single thread.

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

FRIEDRICH LEHNER.

Witnesses:

A. LIEBERKNECHT,  
JAKOB BALTISBERGER.