

UNITED STATES PATENT OFFICE.

MARIE JOSEPH AMAND DARGELOS, OF AIX-EN-PROVENCE, FRANCE.

PROCESS OF PREPARING ANIMAL-HAIRS FOR FELTING.

SPECIFICATION forming part of Letters Patent No. 390,348, dated October 2, 1888.

Application filed April 11, 1888. Serial No. 270,361. (No specimens.) Patented in France June 29, 1887, No. 184,535; in Belgium June 30, 1887, No. 78,017; in Germany July 22, 1887, No. 42,692, and in Austria-Hungary November 25, 1887, No. 56,691.

To all whom it may concern:

Be it known that I, MARIE JOSEPH AMAND DARGELOS, M. D., a citizen of the Republic of France, residing at Aix-en-Provence, France, have invented an Improved Process of Preparing Animal-Hairs for Felting, of which the following is a full, clear, and exact description, and which has been patented in the following countries: in France, No. 184,535, dated June 29, 1887; in Belgium, No. 78,017, dated June 30, 1887; in Germany, No. 42,692, dated July 22, 1887, and in Austria-Hungary, No. 56,691, dated November 25, 1887.

My invention relates to felt-hat manufacture, and particularly to the treatment of naturally straight-haired animal-fur, which in its natural state is only capable of use as an outside flowing nap, whereby the points of the scales which clothe said hairs may be raised or lifted and the hairs twisted, curved, or bent, thereby rendering said hairs capable of binding with each other, and thus facilitating the operation of felting. Heretofore mercury in solution with sulphuric or nitric acid has been used for this purpose; but its employment, while producing the desired result, has been of great injury to the health of the workmen engaged in that department of hat-manufacture, owing to the poisonous vapors generated by the action of the acids on the mercury.

The object of my invention is to dispense with the use of a mercury solution altogether and to substitute for it a solution which shall be fully as effective in its operation upon the hairs of the fur and produce an equally good result, and yet be without injurious effect upon the health of the workman.

In carrying my invention into effect I take two parts of nitric acid and three parts of hydrochloric acid, which, when combined, produce what is termed in chemistry "aqua regia," and dilute these acids, more or less, with water, say with from five to ten parts of water, according to the quality and origin of the hairs to be treated, a stronger solution being necessary where the hairs are naturally straight

and harsh than in the case of hairs which are by nature pliable and soft, as will readily be understood. The skin to be operated upon is laid upon a table or other suitable support, and the solution of aqua regia is applied to the hairs by a brush, as in the case of the application of the mercurial solution, the workman rubbing said solution briskly and strongly into the hair until the latter is well moistened. During this operation the health of the workman is in no way endangered, as no noxious and poisonous vapors are evolved from the solution at this time. The skin is then stretched upon a suitable frame, and is then carried to and inclosed in the stove or heating-chamber, the temperature within which has been raised to 60° or 80° centigrade, more or less, according to the strength or weakness of the solution. Under the influence of this heat the two acids constituting the aqua regia react the one upon the other and give off hypo-azotic and chlorine gases, and these gases acting upon the hairs raise the points of their scales and also render the hairs pliable, and thus give them the capability of being readily felted with other hair which has been similarly treated. It will thus be seen as these poisonous gases—hypo-azotic and chlorine—are evolved only when the skins are exposed to a high temperature in the closed stove or heating-chamber, and the workman is always upon the outside, he is not exposed to danger, as in the case of the use of the mercurial solution, where the poisonous gases are evolved without the intervention of heat. Another advantage in the use of the solution of aqua regia is the great economy which is worked by the substitution of hydrochloric acid for mercury. After the skins have been sufficiently acted upon by the vapors from the solution they are withdrawn from the stove or heating-chamber, the hair is removed in the usual manner, and is then ready to be felted.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. As an improvement in the art of prepar-

ing animal-hair for felting, applying to said hair before the skin is depilated an aqueous solution of nitric and hydrochloric acids, as and for the purposes herein set forth.

- 5 2. As an improvement in the art of preparing animal-hair for felting, applying to said hair before the skin is depilated an aqueous solution of nitric and hydrochloric acids, and

then subjecting said skin to artificial heat in a closed chamber, as and for the purposes herein set forth.

Paris, January 28, 1888.

MARIE JOSEPH AMAND DARGELOS.

Witnesses:

ROBT. M. HOOPER,
M. GAGONZINE.