

UNITED STATES PATENT OFFICE.

THÉOPHILE TEMPIED AND GEORGES DUMARTIN, OF PARIS, FRANCE.

PROCESS OF PREPARING PEAT FOR SURGICAL USE.

SPECIFICATION forming part of Letters Patent No. 642,387, dated January 30, 1900.

Application filed March 28, 1899. Serial No. 710,841. (Specimens.)

To all whom it may concern:

Be it known that we, THÉOPHILE TEMPIED and GEORGES DUMARTIN, citizens of the Republic of France, and residents of Paris, France, have invented an Improved Method of Treating Natural Peat or Turf, of which the following is a specification.

This invention relates to the production of fibrous products by certain methods of treating the natural fibrous materials; and it has for its object to treat the natural peat with a view of developing its therapeutic and hygienic qualities and imparting to it a power of absorption more or less great, according to the requirements of its applications.

In carrying out the invention the natural peat is subjected to maceration, pounding, a simultaneous beating and washing, a restoration method, and finally sterilization. By preference this treatment is applied only to such portions of the peat whereof the filamentous and fibrous parts have acquired a sufficient degree of mineralization, but which have not advanced far enough to prevent complete disassociation of the fibers.

Maceration.—The carefully-selected peat is put either into a bath of water acidulated with hydrochloric acid or into an alkaline bath (containing, for example, about five per cent. of lime;) but in this latter case the peat is afterward immersed in an acidulated tepid bath to neutralize the alkali. The maceration will ordinarily require about eighteen days.

Pounding.—This operation has for its object to remove the earthy matters from the macerated peat and also to break up and remove the gummy resinous matters which agglutinate the fibers. This pounding is done by preference with pestles provided with removable weights, whereby the weight of the pestle may be varied, if desired. The operating-surface of the pestle may have any suitable form; but care should be taken that it shall not be such as to cut or injure the fiber, and it should be somewhat yielding or elastic. The duration of the pounding and the force exerted therein will necessarily depend on the degree of resistance offered by the fibrous macerated material submitted to treatment. This primary pounding is not an absolutely necessary step in the process,

but it facilitates and much abridges the succeeding operations.

Beating and washing.—These operations are performed simultaneously. The fibers of the peat having been measurably separated and roughly cleansed by the preceding operations, the mass of fiber is now submitted to beating and washing in order to detach from it all foreign and adventitious bodies, which soil the fibers and render them rough and brittle, and also in order to preserve the suppleness and length of the fibers and develop their natural qualities. These joint operations are best performed in a washer containing only pure warm water—that is, water free from chemicals or ferments which would remove from the fiber its medicinal and hygienic qualities or impair it, and also water free from anything which would soil the fiber. The preferred form of washer will be a box or tank having upright walls and an outlet or outlets at its bottom whereby the waste water may be permitted to flow away continuously or intermittently, as desired, the clean warm water flowing into the box continuously to replace that which flows off as waste. A horizontal shaft is rotatively mounted in the box and provided with a series of radial elastic switches or rods for beating, and means are provided for rocking this shaft rapidly through about ninety degrees. The free ends of the switches or flexible rods are arranged to approach within eight to ten centimeters of the wall of the box and the level of the water therein, and for a box or tank having a width of from seventy to seventy-five centimeters the switches should have from one hundred to one hundred and twenty strokes per minute. The rapid vibration of the rods or switches in their movements to and fro in the water projects the floating fibers against the sides of the box and separates them, and the eddies formed by the switches in the water draw the fiber toward them to be acted upon and whipped or beaten again and again. Thus the fibers are cleaned and separated without impairment of their physical and chemical properties.

During the latter part of the washing operation, particularly when it is desired to ob-

tain peat fibers very bright and clear or more or less modified in their consistency, elasticity, and absorptive qualities, known chemical agents capable of producing the effects desired may be added to the warm washing-water. Examples of such agents are the alkaline carbonates, and this treatment may or may not be followed by immersion of the fiber in a neutralizing acid-bath, or the fiber may be immersed in the acid-bath alone, or decolorizing salts or oxidants may be used—such as hypochlorite of soda, of potash, or of lime, the permanganates, the bisulphites, &c., or detergents, such as soap, turpentine, ether, petroleum, &c. Notably we have produced peat fiber clear, golden, &c., by the action of electric currents passed through the mass in different solutions, as of chlorids, Stassfurt salt, &c. The electrical action appears to favor, very notably, the disintegration of the vegeto-mineral elements. When the peat fibers have been submitted to the substances above named, one or more, they must be afterward washed in pure warm water.

Restoration.—The object of this process is, in part, to restore the natural color of the fiber, which is always more or less modified by prolonged washing, even when only pure water is used, and this restoration of the color is effected without in any way changing the therapeutic properties of the fiber. This treatment of the fiber is effected by immersing it for a considerable time in a bath containing an ammoniacal salt or chlorid of ammonia, sodium, or potassium, or a mixture of these salts. The strength of the solution may vary from one-half to two per cent., according to the salt used and the result sought.

In some cases, and particularly when the prolonged washing has darkened or blackened the fiber, we first add to the restoring-

bath a small proportion of some glutinous or adhesive material, and this facilitates the complete restoration.

Sterilization.—When the peat fiber is designed for antiseptic purposes more especially, it is submitted both before and after it is packed to a sterilizing treatment either with live steam or by treatment *in vacuo* with vaporized or gasified antiseptic substances, such as fermochloral, for example.

By the preparation of the peat fiber as described above we obtain a fiber having all the natural and antiseptic qualities of peat fiber, but with different intensities, and notably with an absorbent power more or less rapid and of variable strength.

Our fiber prepared as above may be used by physicians and surgeons for dressings in the same manner that other absorbent material has been heretofore employed.

Having thus described our invention, we claim—

The herein-described method of treating selected natural peat for the purpose of obtaining therefrom a fiber especially adapted for antiseptic and hygienic uses, which consists in first macerating the natural peat for several days in order to soften it and remove the grosser impurities, then beating and washing it in pure water in order to cleanse it thoroughly, then treating the fiber with an ammoniacal bath to restore its color, and then sterilizing it, substantially as set forth.

In witness whereof we have hereunto signed our names, this 8th day of March, 1899, in the presence of two subscribing witnesses.

THÉOPHILE TEMPIED.
GEORGES DUMARTIN.

Witnesses:

ALBERT MAULVAULT,
EDWARD P. MACLEAN.