

UNITED STATES PATENT OFFICE.

ACHILLE VAN STEENKISTE, OF BRUSSELS, BELGIUM.

RETTING PROCESS FOR TEXTILE FIBERS.

No. 816,622.

Specification of Letters Patent.

Patented April 3, 1906.

Original application filed February 14, 1902, Serial No. 94,069. Divided and this application filed August 3, 1904. Serial No. 219,411.

To all whom it may concern:

Be it known that I, ACHILLE VAN STEENKISTE, manufacturer, a subject of the King of Belgium, residing at 286 Rue du Progrès, Brussels, in the Kingdom of Belgium, have invented new and useful Improvements in or Relating to Retting Processes for Textile Fibers, (for which patents have been filed in Belgium, August 2, 1901, Patent No. 157,966; in France, December 26, 1901, Patent No. 317,282; in Great Britain, January 3, 1902, Patent No. 244/02; in Germany, January 8, 1902, Patent No. 143,126; in Russia, January 12, 1902, Certificate No. 16,114; in Hungary, January 14, 1902, Patent No. 24,367; in Austria, January 21, 1902, Certificate No. 23,166; and in Italy, January 30, 1902, Patent No. 152,203,) of which the following is a full, clear, and exact description.

The retting process which forms the subject of this invention is a divisional application of an application filed by me on the 14th day of February, 1902, Serial No. 94,069, and differs, essentially, from the process previously practiced, as the dry steam never comes into immediate contact with the fibers, which would result in depriving them of all their flexibility.

My new process comprises admission of steam and continuous rotary motion of the textile fibers, so that steam never comes into contact with a single dry fiber. The pectic acid gets therefore uniformly distributed in the fiber, it adheres to them in a more efficient manner than is the case when the retting is effected in a river, so that after a shorter operation a supple flax of beautiful appearance is obtained. My new process has therefore considerable advantage over the processes hitherto known, both as regards the quality of the linen and the facility and rapidity of the operation.

The process chiefly consists in the treatment of the flax to be retted by water and steam at different temperatures and at different pressures, according to the description given hereinafter.

For carrying out the process according to this invention an apparatus is used consisting chiefly of a tightly-closing boiler, in which is a drum provided with compartments and capable of being rotated about a spindle. The flax to be retted is placed in the boiler, the bunches being placed in the longitudinal direction.

The drum or the retting-basket must be ca-

pable of intermittently rotating, so as to turn flax at regular intervals, moisten its fibers uniformly during determined time periods, this being an essential condition for arriving at the desired result.

As is well known, it is impossible to render soluble and eliminate the pectin except by the application of suitable temperature. All processes hitherto suggested for rapid artificial retting, according to which water or hot steam were used, were unsuccessful, because the temperature of water or steam used was either too low or too high, so that the fibers always retained a portion of the pectin in the shape of an insoluble substance which could not be removed therefrom.

According to this invention, the pectin is rendered soluble and removed in two operations, which must be kept distinctly separate from each other, in the following manner: First of all, the flax to be retted is introduced into the drum in longitudinal direction and the boiler is closed in a tight manner. Then by means of a pipe arranged under a perforated false bottom water of ordinary temperature and in sufficient quantity to almost completely cover the flax is introduced into the boiler. Steam at about 100° centigrade at the pressure of approximately one atmosphere is then admitted through another pipe, the water thus being heated to about 95° or 100° centigrade. Under the action of hot water, the temperature of which is maintained nearly for an hour at the given value, the pectin is converted into soluble pectic or parapectic acid which owing to its gelatinous consistency continues to adhere to the fibers, while all other soluble substances and constituent elements are removed through a drain-cock. At the end of this operation there remains in the boiler only parapectic acid with which only the fibers are impregnated, the gelatinous parapectic acid containing all its pectic acid that remained insoluble. Then in order to lixiviate the remaining pectin and to discharge it with the water of lixiviation before the solution of pectic acid takes place in order to enable the pectic acid to spread uniformly over the fibers a bath similar to that hereinbefore described is utilized, and a current of steam at a pressure of about three atmospheres is admitted into it. During the first half-hour, during which the water becomes heated, all the pectin becomes dissolved and there only remains on the fibers insoluble pectic acid, which is dis-

solved in an absolutely complete and uniform manner by admitting for another half-hour a current of steam at the same pressure, the object being to gradually raise the temperature and to dissolve the pectic acid uniformly. This spreads evenly on the fibers without mixing with the heating water or escaping with it.

In order to impart to the flax the desired flexibility, so as to make it capable of resisting stains, a suitable quantity—say ten per cent.—of glycerin or of sulforicinate of sodium or of any other softening substances that do away with the necessity of lubricating can be added to the bath in question. The water and steam are then discharged, the flax thus being washed. The whole operation does not last more than two hours, and the fibers get an absolutely correct color and consistency.

If it is desired to apply the process to other textile fibers of less delicate quality than that of flax—such as, for instance, hemp, jute, &c.—the operation of the second bath could be repeated twice or more with a current of high-pressure steam, according to the proportion and quality of pectin contained in the fibers in question.

Having thus described my invention, what I claim is—

Process for retting textile fibers such as flax, hemp, jute and the like, characterized by the passage of the said fibers through a bath, the water of which has been raised to a temperature of about 95° to 100° centigrade by the introduction of steam, for the purpose of converting the pectin into parapectic acid, the operation in question being followed by the passage through a second bath maintained at a pressure of three atmospheres by the introduction of a current of steam, for the purpose of dissolving and discharging parapectic acid and of spreading uniformly throughout the fibers pectic acid finally dissolved, the latter operation being effected, if desired with the addition of substances intended to soften and to render the fibers supple, such as for instance glycerin or sulforicinate of sodium.

The foregoing specification signed this 17th day of June, 1904.

ACHILLE VAN STEENKISTE.

In presence of—

R. KOCH,
GREGORY PHELAN.