UNITED STATES PATENT OFFICE.

JOHN H. WINGFIELD, OF MONTCLAIR, NEW JERSEY.

PROCESS OF CLEANING WOOL AND RECOVERING WOOL-FAT.

SPECIFICATION forming part of Letters Patent No. 549,041, dated October 29, 1895.

Application filed July 24, 1895. Serial No. 557,028. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN H. WINGFIELD, a citizen of the United States of America, residing at Montclair, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Processes of Cleaning Wool and Recovering Wool-Fat, of which the following is a specification.

My invention is an improvement upon the method of cleaning wool described and claimed by me in application for United States Patent, Serial No. 563,440, filed September 23, 1895, the said application being a renewal of my application, Serial No. 430,844, filed April 27, 1892, allowed February 27, 1895.

The wool in the grease is subjected to the action of a warm, heavy, petroleum-oil ranging from kerosene of about 51° Baumé down, but preferably of specific gravity of 30° to 38° Baumé and an uncracked oil. The specific gravity is assumed to be determined at about 60° Fahrenheit. The table of specific gravities and degrees Baumé in *Cairn's Quantitative Chemical Analysis* (Henry Holt & Co., New York, 1890) is followed. The wool is placed in any suitable vessel, as the basket of a hydro-extractor, or a tank, or an ordinary wool-scouring bowl provided with pressure-rolls. The wool is then saturated with or steeped in oil at a temperature of about 120° Fahrenheit. The temperature can be varied considerably. The quantity of oil used should be from one-half to one gallon for each pound of wool. This is not essential, the only point being to subject all parts of the wool to the action of the solvent. After effecting a thorough solution of the suint, which requires from five to twenty minutes, the wool is passed from the solution through pressure-rolls, or if working with a hydro-extractor a portion of the solution is drawn off and further drained by revolving the basket. It may sometimes be desirable to repeat this operation. The residue which remains on the wool should be and, if the work has been thorough, is free from unsaponifiable constituents of the suint from much of the dirt and other foreign matter. This unsaponifiable matter is the greatest obstacle to scouring wool in the grease. It having been removed, the residue left on the wool is, as I have discovered, an excellent detergent and an efficient aid to scouring. Therefore, instead of washing off this residue of petroleum solvent and soluble constituents of suint by rinsing the wool with the aid of a hydro-extractor or otherwise, as suggested in my aforesaid application, I omit this step of rinsing, which without completely cleaning the wool removes what I find to be an invaluable scouring agent; nor do I in carrying out my present invention remove as much of the solution from the wool as in my said other application, Serial No. 563,440. Instead of thus rinsing the wool, I scour it with the aid of this residue by immersing it in water or other suitable liquid in a scouring-bowl. I thereby get the full benefit of the scouring properties of the residue and obtain the fiber in a much better condition than by rinsing the wool to wash off this residue and then scouring, as suggested in said application.

I may, if I so desire, scour the wool without removing the solution; but in such a case it will be generally found necessary to subsequently rescour it.

The process may be somewhat more fully stated as follows: The suint having been dissolved in a heavy petroleum-oil, the wool, unless already in such a bowl, is now, after removing a portion of the solution, as described, passed into a scouring bowl or tank containing either plain water or a slightly alkaline or soap solution, in which it is scoured. If a soapy solution is used, I prefer to use a solution of a neutral soap in water. This operation will usually be repeated, a weak saponaceous solution or plain water being used, if found desirable, as the last agent applied. The wool is then dried by pressure-rolls. It is now sufficiently clean for carding and spinning. There may remain on the fiber a trace of the solvent used. This acts as a lubricant for the wool and is favorable to the fiber in carding or spinning.

In order to reduce the quantity of solvent used, I may add to it water, or water with soap, or water with an alkali, preferably water with a neutral soap. This may be in any desired proportions, provided there is sufficient petroleum-oil to dissolve the suint. After the wool has been scoured with this mixture and passed between pressure-rolls the scouring may be finished by any of the usual methods, preferably with a neutral soap solution, as above

described. To recover the suint and solvent, the mixture or solution in the first bowl may be allowed to stand and cool, and the solvent and the suint will separate from the water and can be decanted. The suint will be in the form of a hydrate. I call this product "hydrated wool-fat." I do not, however, claim to be the inventor or discoverer of the said product.

It will be seen that I use nothing but petroleum and water or, perhaps, an alkaline or soapy solution, and keeping the wool lubricated during the whole process deliver it to the manufacturer in condition to be carded and spun, and this with the minimum amount of handling and, if desired, all in an ordinary scouring-bowl. The result is that the fiber is at all times in a normal condition and eventually sounder than when treated by any method at present known. It is obviously immaterial whether the traces of the petroleum solvent are scoured off before or after the wool is manufactured, so far as the patent ability of my process is concerned. One of the strongest points in favor of the utility of my invention is that the treatment of the wool is such as to fit in admirably with the process of manufacturing that is at present carried on.

I do not in this application claim the broad process of cleaning wool in the grease by dissolving the suint in a heavy petroleum-oil, nor the product obtained by dissolving the suint in such an oil, as these are claimed in my application, Serial No. 536,996, filed February 1, 1895, allowed April 9, 1895.

Having now described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The process of cleaning wool which consists in subjecting the wool to the action of a petroleum oil not lighter than 51° Baumé and scouring it with the aid of the resulting solution, substantially as described.

2. The process of cleaning wool which consists in subjecting the wool to the action of a petroleum oil not lighter than 51° Baumé, removing a portion of the solution, and with the aid of the residue scouring the wool, substantially as described.

3. The process of cleaning wool which consists in subjecting the wool to the action of a mixture of petroleum oil not lighter than 51° Baumé and water and scouring it with the aid of the mixture, substantially as described.

4. The process of recovering hydrated wool-fat which consists in dissolving the suint of wool in a warm mixture of petroleum oil not lighter than 51° Baumé and water, separating the wool and liquid, and cooling the liquid, substantially as described.

Signed by me, in New York city, New York, this 23d day of July, 1895.

JOHN H. WINGFIELD.

Witnesses:
THOMAS EWING, Jr.,
HAMPTON D. EWING.