

(No Model.)

C. L. PUECH.

PROCESS OF AND APPARATUS FOR UNHAIRING SKINS.

No. 519,345.

Patented May 8, 1894.

FIG. 1.

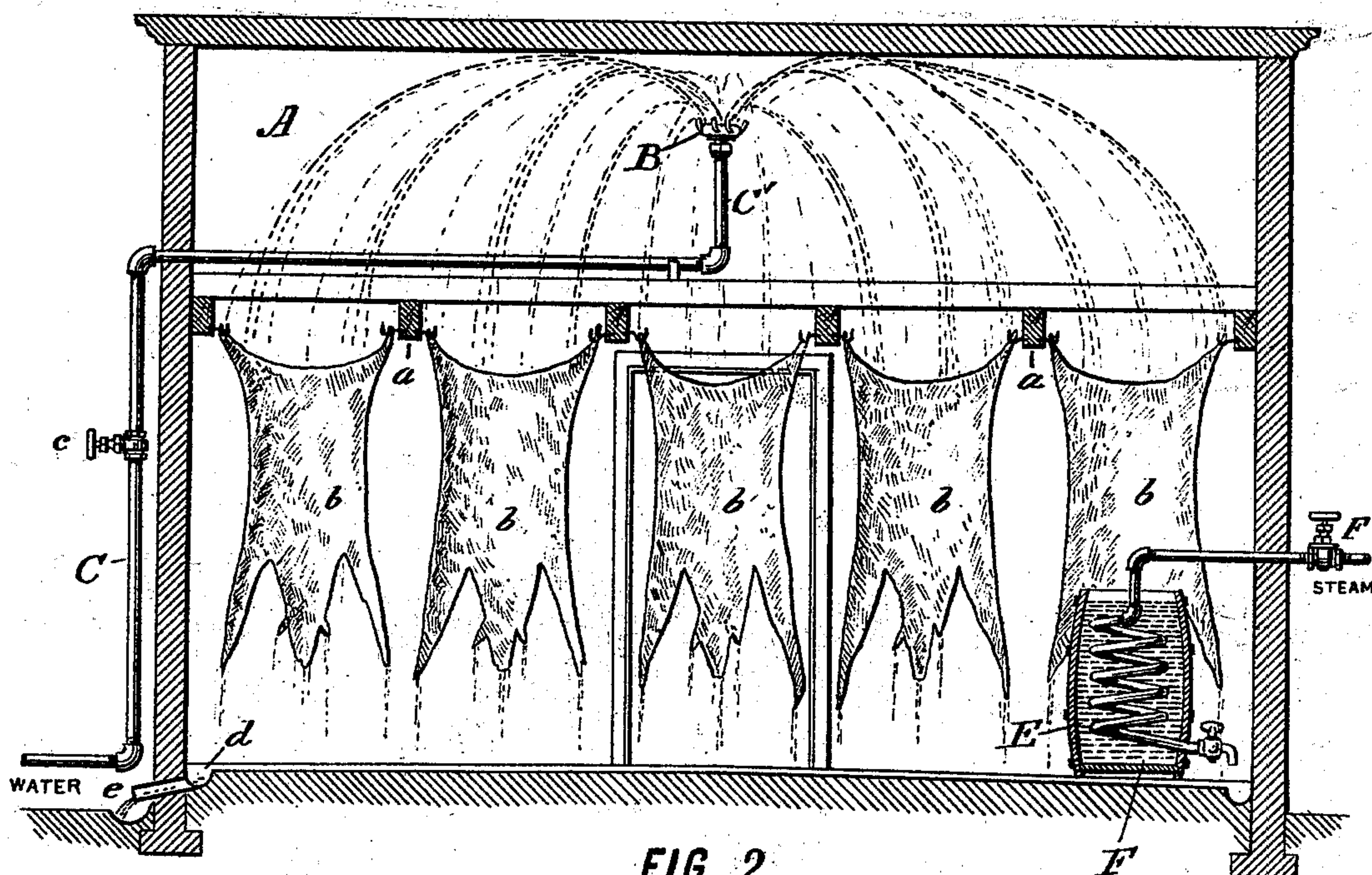
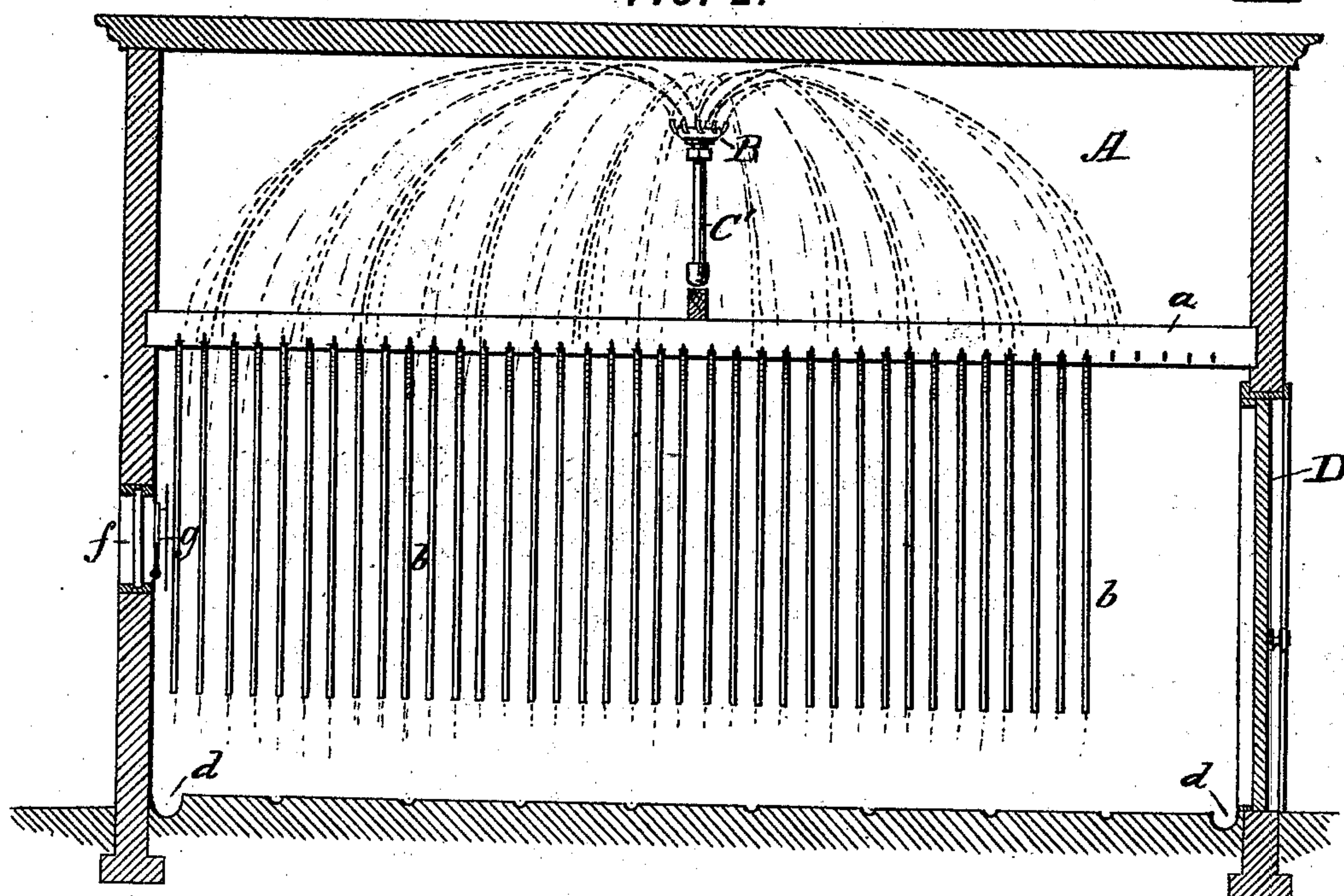


FIG. 2.



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UNITED STATES PATENT OFFICE.

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PROCESS OF AND APPARATUS FOR UNHAIRING SKINS.

SPECIFICATION forming part of Letters Patent No. 519,345, dated May 8, 1894.

Application filed October 31, 1893. Serial No. 439,624. (No model.)

To all whom it may concern:

Be it known that I, CÉCILE LAURE épouse PIERRE PUECH, a citizen of the French Republic, residing in Mazamet, (Tarn,) France, have invented certain new and useful Improvements in Processes of and Apparatus for Unhairing Skins, of which the following is a specification.

This invention provides an improved means for the removal of hair or wool from cow, calf, sheep, lamb, or other skins. Heretofore three methods have been practiced for this purpose, which I will briefly describe.

The first and oldest method is to treat the skins by means of a depilatory bath of water, to which is added lime, orpiment, &c., a system which detaches the hair or wool at the end of four or five days and produces good leather, but spoils the wool or hair.

The second mode consists in spreading a depilatory chemical on the flesh side of the skin, whereupon the skins are piled up, and after five or six hours the hair or wool is ready to be detached. This system produces generally a good leather, but the chemical employed being a very strong mordant attacks the wool, and in spite of the utmost care, deteriorates it and reduces its value; this means furthermore is costly because of the expense of the chemicals, and because of the great amount of labor required for unhairing the skins.

The third process called "sweating" is performed in a hermetically closed room or sweating chamber, in which the skins after having been soaked are hung up by the hind quarters about three inches apart on hooks provided for that purpose. A space of about three feet is left between the top of the beams sustaining the skins and the ceiling, to permit the ammonia which is generated to rise up above the skins. The room contains ordinarily from four hundred to five hundred skins, and when the wet skins have been hung up the room is closed and fermentation takes place, which loosens the wool or hair in the course of two or three days in summer or eight or ten days in winter. This method injures the wool or hair less than the preceding ones, though the wool commonly becomes yellow and is somewhat weakened, but

the principal disadvantage of this method is the great danger it involves of ruining great numbers of skins, since it is difficult to determine the right moment when the skins should be removed and scraped, and when this moment occurs the operation must be performed at once, since a delay sometimes of only one hour will entirely spoil the skins by reason of their prolonged exposure in the chamber. The system consequently requires many skilled workmen always ready, besides a very skillful and high-priced foreman. As it is only by the fermentation that the pores are opened and the wool or hair detached, it results from this fermentation that a large quantity of ammonia gas is produced, which quickly reddens the leather, and renders it very difficult to find the exact moment when the chamber should be opened. Not only is this ammonia very dangerous for the leather, but this gas is also even more dangerous to the health of the workmen, since when the chamber is opened the gas so actively attacks the eyes of the workmen that they are obliged to retire during eight or ten minutes until the gas shall have passed away. The difficulties attending this process are so great that many manufacturers prefer to wholly suspend operations during the warmest summer months and the coldest months of winter, because it is during both these times that the process presents the utmost difficulty, the skins heating too quickly in summer and too slowly in winter.

The defects and difficulties of the methods heretofore in use being now understood, I will proceed to describe the means at which I have arrived after numerous and costly experiments for overcoming the objections hitherto encountered, and rendering the depilatory operation very simple, easy and safe.

According to my invention I employ instead of the sweating chamber, a sprinkling chamber or spray room, the proportions of which may be similar to those of a sweating chamber, and which in like manner is provided with beams having hooks for hanging up the skins. In this chamber I provide a spray-nozzle or automatic sprinkler, with a pipe for supplying it with water under pressure.

ure, and a valve for controlling the flow of water, so that by the action of these parts there is created in the upper part of the chamber, and above the skins, a fine spray or rain which is thrown into all parts of the chamber, and falls upon the skins, trickling continually down over them, and serving thus to keep them completely saturated and soaked with water, and at the same time washed and cleansed. The water which falls on the floor is permitted to run away through suitable gutters and is conducted out of the chamber. By this treatment the pores are opened and the wool or hair loosened in the course of forty-eight hours, and upon the opening of the room there is no bad odor, and both the wool and leather of the skins are in perfect condition, since the loosening of the wool has been accomplished without any apparent fermentation, and any ammonia or other deleterious matter which may have been generated and given off, has been absorbed and washed off and carried away by the continual trickling streams of water. Since no perceptible fermentation has occurred and no ammonia exists in the chamber, no harm can ensue from leaving the skins in the room for even one or two days after the wool is loosened before removing them and scraping them, or otherwise mechanically detaching or pulling off the loosened wool. In this last respect my process effects a momentous improvement over the old sweating process, wherein a delay of one hour would suffice often to ruin all the skins, whereas by my method the scraping of the skins may be done at the convenience of the manufacturer, or whenever men can be spared, and without incurring any risk of damage by the delay.

The accompanying drawings illustrate one suitable construction of sprinkling chamber for carrying out my invention, being that which I believe to be best adapted for the purpose.

Figure 1 is a vertical transverse section, and Fig. 2 is a vertical longitudinal section.

The room or chamber may be built in any suitable way, of wood, masonry or otherwise, and is provided with longitudinal beams *a a* having hooks at intervals of about three inches apart from which to hang by the hind quarters the skins *b b*, to be unhaired. Above the beams, and consequently above the skins, is left a free or open space *A* for the dissemination of the spray.

To generate the spray, I provide a spray nozzle or sprinkler *B*, mounted rotatively on the upturned end *C'* of a water-pipe *C*, which enters the chamber from the outside, and which outside the chamber has a valve *c* for controlling the flow of water. The spray-nozzle *B* has oblique delivery jets, and is preferably free to rotate on the pipe after the manner of the rotary lawn sprinklers commonly employed for watering lawns with a fine spray. Any kind of nozzle or sprinkler, however, which will thoroughly subdivide or

atomize the water and throw it into all parts of the chamber *A* may be employed. The water should enter under sufficient pressure to insure the rotation or other proper spraying action of the spraying nozzle.

D is the door through which the workmen enter the chamber to bring in and remove the skins.

For removing the water which continually drips to the floor, the latter is provided with a gutter or channel *d* which may extend all around it, and which leads at one side to a water outlet *e*, Fig. 1.

After the skins to be unhaired have been hung up in the chamber, the door *D* is closed and the water valve *c* opened to admit water under pressure to the spray-nozzle, by which it is atomized, and the entire upper chamber *A* filled with spray, which ceaselessly falls upon the skins and trickles down over them, keeping them thoroughly soaked, and continually washing the skins and the wool, and falling off from the skins onto the floor, from which the water runs away by the gutters *d* and outlet *e*. The process is kept up continuously or practically so for forty-eight hours or thereabout until the desired result of loosening the hair or wool is accomplished. My invention, however, is not limited to the absolute continuity of the sprinkling operation, since the admission of water may at any time be suspended to enable a person to enter the chamber and examine the condition of the skins, or for any other purpose.

The continual sprinkling serves to keep the chamber at a uniform temperature such as is necessary for the good progress of the process, the average temperature being from 15° to 18° centigrade; by varying the temperature of the water it is easy for the foreman to control the temperature of the room to maintain it at the point which is most desirable. To enable him to read the temperature, a window *f* is placed at some suitable location, inside of which a thermometer *g* is placed so that he may see it from the outside.

In order that the process may be carried on as readily in winter as in summer, any suitable means may be provided for elevating the temperature of the room, so that the unhairing shall be done as quickly as in summer. I prefer for this purpose to place in some corner of the room a small receptacle, either of wood, iron or other material, which is filled with water and heated by any suitable means. I have shown in Fig. 1 a cask or vat *E* of water, within which is placed a steam coil *F*, which is closed, and is supplied with steam through a valved pipe *F'*, so that by turning steam into this coil the water is heated and boils. The condensation may be led off by a pipe *F²*. Thus the steam is not discharged from the coil into the room, or even into the water. The boiling water disengages a warm vapor, which moderates the temperature of the falling water, while on the other hand the overheating of the skins is

prevented by the continually falling rain which settles upon and trickles over them.

The practical operation of my new process has demonstrated it to be attended with the important economic results stated, in that it accomplishes the unhairing in less time than formerly, and without the slightest injury to either the wool or the leather, while the unhairing is accomplished with the minimum of expense and without any risk whatever.

My invention has no reference to the particular means employed for detaching the loosened wool or hair from the skins, for which purpose any known mechanical (as distinguished from chemical) process may be applied, such as scraping, beating, the use of powerful jets of water, &c.

I claim as my invention the following-defined novel features, substantially as hereinbefore specified, namely:

1. The process of loosening the hair or wool from skins consisting in suspending them in a closed chamber, maintaining therein a temperature approximating 15° to 18° centigrade and there subjecting them to a spray of water which falls on the skins and trickles over them, thereby opening their pores by keeping them moist, and simultaneously washing

them, whereby the wool or hair is loosened without apparent fermentation and all ammoniacal gas is absorbed and washed away.

2. The process of unhairing skins consisting in suspending them in a closed chamber, and there subjecting them to a spray of water which falls on the skins and trickles over them, and at the same time maintaining the chamber sufficiently warmed by disengaging therein the vapor from a bath of heated water and subsequently mechanically removing the loosened wool or hair.

3. An apparatus for unhairing skins, consisting of a close chamber having hooks for suspending the skins, arranged to leave a free space above the skins, a valved water-pipe, a spray-nozzle or sprinkler supplied by said pipe and adapted to discharge the water into said free space in a spray, and an outlet for continually discharging the water at the bottom of the chamber.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

CÉCILE LAURE ÉPOUSE PIERRE PUECH.

Witnesses:

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EDITH F. COWLES.