

UNITED STATES PATENT OFFICE.

GEORGE E. DYCK, OF CHICAGO, ILLINOIS, ASSIGNOR TO SCHWARZSCHILD & SULZBERGER CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PROCESS OF CURING HAIR.

957,316.

Specification of Letters Patent.

Patented May 10, 1910.

No Drawing.

Application filed November 18, 1908. Serial No. 463,280.

To all whom it may concern:

Be it known that I, GEORGE E. DYCK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Processes of Curing Hair, of which the following is a specification.

My invention pertains to processes or methods of curing hair, that is, rendering the hair fit or suitable for commercial use such as for mattresses, cushions, pads, and the like. When the hair is removed from the skin or carcass, as when it is scraped from the body of a hog, more or less scurf or thin scales are also scraped off and remain either adhering to or mixed with the body of free hair, the latter not being in condition for use in its ordinary relation until this scurf or scales, which usually includes particles of skin, fat, albuminous matter, or protein, has been wholly eliminated, otherwise the body of hair would not only have an objectionable odor, but would also be subject to disintegration and possibly putrefaction. Two methods or processes have heretofore usually been employed for freeing the hair proper from this objectionable animal or organic matter. The body of hair as it comes from the animal may be spread out in a field for many months, subjected to all conditions of the weather and in such relation that flies, maggots, and other insects may eat or destroy the objectionable scurf or scales, but such a process is not advantageous for employment because of the length of time necessary for its completion, and because of the amount of money continuously invested and tied up in the hair during the curing process. In accordance with the second method, which is that now extensively commercially employed, the hair is subjected to the action of caustic soda or similar product which chemically destroys, dissolves, or eats up the scurf or scales, leaving the hair free therefrom. The main objection to the employment of this method is that the action of caustic soda or similar chemicals injuriously affects the hair itself, partially destroying the same and diminishing the elasticity or resiliency of the body or mass of the same; in other words, the chemicals decrease the very quality of the hair for which the latter is used in ordinary ways. In accordance

with the principles of this invention I propose to remove this scurf or scales from the hair by digesting the same in much the same way that animal matter is digested and prepared for assimilation in the human or other stomachs and other organs of the digestive tract. I am, by the employment of this process, able to produce clean cured hair in a short time, and a body of which cured hair possesses a maximum degree of resiliency and elasticity. There are several ways in which this result may be accomplished and the following are samples of what may be done under the principle of this invention which has been outlined above. For example, the ingredients or constituents of the digestive fluid may be desirably used in the following mentioned proportions, but it is to be understood, however, that this artificial digestant may be compounded with its ingredients in quantities differing considerably from those here set out. Ordinarily I use 60 gallons of water, 1/3 pound of pepsin in powder form, and 1 pound of hydrochloric acid, keeping the temperature of the digestant at approximately 104° Fahrenheit, although this temperature may be varied 10° more or less either way without seriously modifying the action of the fluid. Such a quantity of digestant will ordinarily digest approximately 1000 pounds of such scurf or animal matter, and since 1000 pounds of hair usually has adhering thereto or mixed therewith somewhere in the neighborhood of 25 pounds of scurf or scales, depending upon the action of the hog scraper or other de-hairing device, the breed of the animal, and the kind of treatment as regards feeding and housing which it has previously had, it will be apparent that this process or method can be carried on economically and effectively.

The body of hair is immersed and retained in the digestant for a period of from six to eight hours usually, the temperature (104° F.) of the liquid during this period being maintained practically constant by any suitable heating means, such, for example, as steam pipe coils. At the termination of this period the liquid containing the digested scurf or animal matter is drained from the containing tank and the mass of hair is washed a few times to remove or eliminate remaining dirt. The subsequent

steps in the treatment of the hair forms no part of the present invention, but it may be well to state that the hair is further washed, picked up by suitable machines to loosen the compacted mass, dyed, and dried, for example, by hot air.

Instead of employing pure pepsin as in powder or other form, the process may be satisfactorily carried out by supplying the digestive fluid with its pepsin by immersing therein a suitable number of the linings of animal stomachs, such as those of hogs, or the whole stomachs of the animals may be used if desired. The pepsin contained in the glands thereof is liberated and becomes part of the digestant, the resulting liquid digesting not only the scurf or scales but also the linings or stomachs themselves. Under these conditions the temperature and time of digesting or treatment above mentioned remain about the same. Inasmuch as the amount of pepsin in such linings or stomachs varies greatly, depending upon a number of factors, no definite number or weight of said linings or organs can be here specified, but can nevertheless be readily determined from trial or examination. Since no appreciable harm is occasioned if an excess of pepsin is present in the digestant, under ordinary conditions it is merely necessary to be sure that sufficient linings or stomachs are used to supply the required quantity of digestive ferment.

Instead of using pepsin, I may employ pancreatin or the pancreatic glands of the animals, but, since the pancreatin will not act under acid conditions, it is necessary to omit the hydrochloric acid mentioned above, and substitute therefor a sufficient quantity of any suitable alkaline salt or compound, such as sal-soda, soda ash, caustic soda, etc. to render the liquid somewhat alkaline. Ordinarily one pound more or less of sal-soda may be used as a substitute, or rather may be employed to replace the one pound of hydrochloric acid above mentioned. When pancreatin is used, about three times as much of it is required as when pepsin is employed, the temperature and time remaining approximately the same as before. When the pancreatic glands themselves are used instead of the pancreatin alone, they are employed practically the same as the stomachs mentioned above. Since the pancreases of the animals, even of the same kind of animals such as hogs, vary greatly in size, weight, and the amount of pancreatin which each may yield, no definite number, weight or quantity of the same can be stated as necessary to produce a given amount of digestant, but this quantity, or an approximation thereto, may be readily determined when all the factors entering into the matter are considered and examined. In any case, it is merely necessary to use enough

glands to produce the required amount of pancreatin. I have also found that bile may be used in place of the pepsin, pancreatin, or the organs or glands, but it does not act as satisfactorily as the others. In general my invention contemplates the employment of the stomachs or glands, whose secretions or active principles assist in the performance or carrying out of the animal's digestion, under proper conditions of temperature and time to free the body of hair from the scurf or animal matter adhering thereto or mixed therewith.

It is to be understood that my invention is not limited to the precise ingredients, quantities, proportions, temperature, etc., specified above, because these may be varied within comparatively wide limits without departure from the substance and essence of my invention and without sacrificing any of its benefits and advantages. It is further to be noted that a plurality or number of digestive ferments may be employed in the digestant instead of a single one if desired.

I claim:

1. The method of curing hair to remove therefrom scurf, scales, or the like, which consists in subjecting the mass of hair removed from the body to the action of a digestant containing as ingredients the active principle or secretion of an animal's digestive organ, and means to render said principle or secretion active, substantially as described.

2. The method of curing hair to remove therefrom scurf, scales, or the like, which consists in subjecting the mass of hair removed from the body to the action of a digestant containing as ingredients one or more animal digestive organs, and means to render the active principle or secretion of said organs active, substantially as described.

3. The method of curing hair to remove therefrom scurf, scales, or the like, which consists in subjecting the mass of hair removed from the body to the action of a heated digestant containing as ingredients the active principle or secretion of an animal's digestive organ, and means to render said principle or secretion active, the mass of hair being subjected to the action of such digestant for a sufficient period of time to digest the scurf, scales, or the like, and free the hair therefrom, substantially as described.

4. The method of curing hair to remove therefrom scurf, scales, or the like, which consists in subjecting the mass to the action of a heated digestant, one ingredient of which consists of one or more animal digestive organs, for a sufficient period of time to complete the digestion of said scurf, scales, or the like, thereby freeing the hair therefrom, substantially as described.

5. The method of curing hair to remove

therefrom scurf, scales, or the like, which consists in subjecting the mass to the action of a digestant containing water, pepsin, and hydrochloric acid, whereby the digestion of
5 said scurf, scales, or the like, frees the hair therefrom, substantially as described.

6. The method of curing hair to remove therefrom scurf, scales, or the like, which consists in subjecting the mass to the action
10 of a heated digestant containing water, pepsin, and hydrochloric acid in the approximate proportion of sixty gallons of water, one-third of a pound of pepsin, and one
15 pound of hydrochloric acid, for a period of time sufficient to free the hair from the scurf, scales, or the like, by the digestion of the latter, substantially as described.

7. The method of curing hair to remove therefrom scurf, scales, or the like, which
20 consists in subjecting the mass to the action of a digestant containing water, hydrochloric acid, and one or more animal stomachs, for a period of time sufficient to free the hair from the scurf, scales, or the like, by
25 the digestion of the latter, substantially as described.

8. The method of curing hair to remove therefrom scurf, scales, and the like, which
30 consists in subjecting the mass to the action of a digestant for a period of approximately

six to eight hours, the temperature of the digestant being maintained substantially constant and at approximately 104° Fahrenheit, said digestant containing water, pepsin, and hydrochloric acid, substantially as
35 described.

9. The method of curing hair to remove therefrom scurf, scales, and the like, which consists in subjecting the mass to the action
40 of a digestant for a period of approximately six to eight hours, the temperature of the digestant being maintained substantially constant and at approximately 104° Fahrenheit, said digestant containing water, pepsin, and hydrochloric acid in the approxi-
45 mate proportion of sixty gallons of water, one-third of a pound of pepsin, and one pound of hydrochloric acid, substantially as described.

10. The method of curing hair to remove
50 therefrom scurf, scales, or the like, which consists in subjecting the mass to the action of a digestant, one ingredient of which consists of one or more of the linings of animal stomachs, substantially as described.

GEORGE E. DYCK.

Witnesses:

FREDERICK C. GOODWIN,
WALTER M. FULLER.