(No Model.)

F. VORCK.

ART OF TAPING FUR.

No. 307,509. Patented Nov. 4, 1884.

Fig: 1.

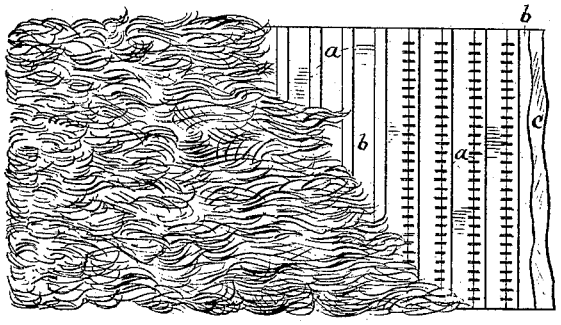


Fig: 2.

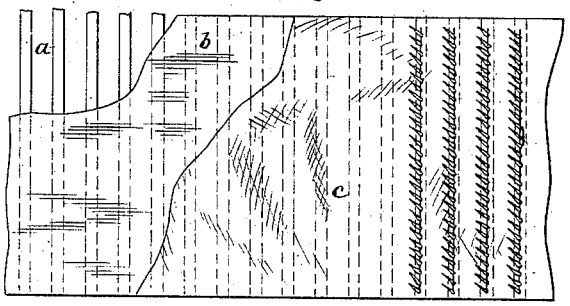
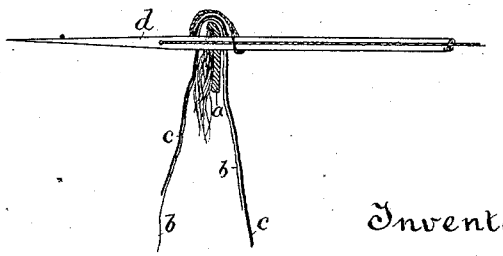


Fig: 3.



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UNITED STATES PATENT OFFICE.

FREDERICK VORCK, OF NEW YORK, N. Y.

ART OF TAPING FURS.

SPECIFICATION forming part of Letters Patent No. 307,509, dated November 4, 1884.

Application filed January 15, 1884. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK VORCK, formerly a subject of the Emperor of Germany, having under oath declared my intention to become a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in the Art of Taping Furs; and I do hereby declare that the following is a full and exact description thereof.

This invention relates more particularly to that method of taping furs in which the strips of furs, after being cut, are attached to a continuous web of textile fabric or other suitable material. I will, however, remark here that certain portions of my invention, especially certain preliminary steps of the process, are also applicable to that mode of taping furs in which the strips of fur alternate with bands of fabric or tape, the two being united by sewing.

The main objects of my invention are to produce an article of much greater durability and strength than has been possible by the methods heretofore in use, this feature being most important when the manufactured article is to be used for trimmings for cloaks, &c., in which case it has to be cut into strips of various widths, whereby the durability of articles made according to former methods has been greatly impaired, as will more fully appear hereinafter. Further objects are to give the finished article a more perfect and even appearance, and to effect a great saving in time and labor in the manufacture.

It has been proposed to secure the strips of fur upon a continuous web of fabric by means of a cementing material, and also, in addition to such cementing, to sew the strips by hand upon the fabric; but this latter proceeding, aside from its being a very slow and tedious process, is open to the objection that the stitching is not sufficiently strong, even when the entire manufactured piece is used as a whole, while, when the manufactured piece is cut up transversely to the direction of the strips of fur, for the purpose of utilizing the same for trimmings, &c., the stitches loosen and pull out very rapidly, so that in the latter case the cementing material alone can actually be relied upon as a holding means. To avoid this difficulty, I have discovered that it is necessary to sew the strips upon the fabric in such a manner that each stitch shall, in a certain measure, become locked against loosening, independently of the security against pulling out, which is afforded by the friction alone of the thread on the fabric and the skin of the several strips. Such a locked stitch, which it would be utterly impracticable to produce by hand-sewing, is formed by nearly every sewing-machine known to me, and I have therefore made numerous experiments, with the object of attaining satisfactory results in this direction, and have ultimately discovered a method of mechanically sewing the strips of fur upon the fabric whereby locked stitches or stitches locked to a certain degree are made sufficiently close and of just the right degree of tightness to insure a reliable fastening, while, with the proper precautions, which also form a part of my invention, and which will be hereinafter set forth, the required evenness and pliability of the manufactured article may be maintained.

Other minor details of my invention relate to certain operations in preparing and cutting up the skins into strips, and separating said strips the required distance apart preliminary to the securing thereof to the fabric; and such operations will also be hereinafter fully described and claimed.

In the accompanying drawings, which form a part of this specification, Figure 1 represents a face view of a piece of taped fur manufactured according to my invention, the hair being partly removed and the sewing being shown only on a few strips. Fig. 2 is an under side view corresponding to Fig. 1, and Fig. 3 is a section showing the sewing on a larger scale.

I will now proceed to give a full description of the entire process of taping furs as I practice it according to my invention, it being well understood that certain steps of said process may be usefully practiced without necessarily carrying out the entire process as herein set forth. The skin of the animal being properly prepared in the ordinary manner is first dampened, and while in a moist condition stretched upon a board, with the fur or hair downward, so as to expose the bare or flesh side thereof. Then the exposed or bare

side is coated with one or more thin layers of a suitable stiffening or size, preferably flour or starch paste. I consider this preliminary step quite important, as the paste gives to the skin, particularly to the finer sorts, a certain body or stiffness, which facilitates the subsequent operations. I then proceed to cut the skin into strips of greater or less width, as the quality of the fur will permit. I find, for example, that one-tenth ($\frac{1}{10}$) of an inch is a suitable width in the case of fox skins of medium or good quality; but I do not intend to confine myself to any particular width of these strips. Care must be taken to cut just only deep enough to divide the skin without injuring the hairs, the strips running, preferably, transversely to the natural direction of the hairs. After the entire skin, or such part thereof as may be desired, is thus divided into strips, I proceed to separate the strips the required distance apart. In this operation it is important to preserve as much as possible the natural condition of the hairs or fur, which, being interwoven, should not be pulled entirely apart, as this would leave distinct marks in the manufactured article. It is also important to perform this operation in a delicate manner, so as not to tear or otherwise injure the skin. To attain both these ends, and also in order to finally obtain an article which shall in every respect present the most perfect appearance possible, it is desirable, not only that the strips, after being separated the required distance apart, shall be equidistant from each other, and as nearly as possible parallel to each other, but also that during the act of separating every two strips from one another the parallelism shall never be destroyed, and I therefore proceed in such manner, both while the separation takes place and after it is accomplished, as to keep the strips constantly parallel. This may be done by employing two combs of sufficient width to span the entire length of the strips. The two combs, being close together, are inserted between two strips, and are then, while being kept perfectly parallel to each other, moved the required distance apart, so as to separate the entire length of one strip from the other at a single operation. The combs, not being inserted deeply into the hair or fur, will divide the latter, without injury thereto, only as much as the required distance between the strips dictates, leaving the main body of the fur in substantially the original interwoven condition, excepting the tension, which naturally results from the separation of the strips. An instrument acting on this principle, and which I have devised in order to be able to effect the separation of the strips in a rapid and easy manner, will form the subject-matter of a separate application for patent. After the strips *a* are thus separated, I proceed in the ordinary manner to lay thereupon a thin sheet of rubber or gutta-percha, *b*, and upon the latter the web of fabric *c*, to which it is desired to secure the strips. I then pass over the whole a slightly-heated sad-iron, or preferably a metallic roller so heated, whereby the gutta-percha is caused to become soft and to serve as a cement between the strips of fur and the textile fabric. After allowing a sufficient time to cool, I introduce the article thus prepared into a sewing-machine. I prefer to use for this purpose the machine patented to C. M. Boland, April 23, 1878, No. 202,695, with such modifications as I have found the peculiar qualities of the article under treatment to require for successful operation.

By numerous experiments I have found that the stitches cannot be made sufficiently loose by operating the machine in the ordinary manner. It is necessary to fold the article as shown in Fig. 3. The needle consequently traverses two thicknesses of fabric and of the sheet of gutta-percha, and (preferably) at least one thickness of skin, and by means of a looper (not represented) makes an overseam stitch. The stitches produced by the machine when the thread is passed through the ordinary tension devices are much too tight to allow the article to be straightened out after the sewing is completed, and this difficulty is increased by the friction produced on the thread when traversing the gutta-percha, which serves to cement the strips of fur to the fabric. I have finally discovered that by discarding all the tension devices of the sewing-machine, and by allowing the thread to run off a spool turning on a smooth pin directly to the needle *d*, the stitch-forming mechanism operates perfectly in consequence of the tension provided by the passage of the needle through the gutta-percha, and that yet the stitches thus formed are sufficiently loose to allow the subsequent perfect stretching and smoothing of the finished article.

I prefer in most cases to let the needle pass through the strip of fur only once for every stitch, as shown in Fig. 3, and then on that side or edge which is nearly free of hair, in consequence of the natural direction of the latter, as will be understood. I can, however, in some cases pass the needle through the strip twice for every stitch; or I can simply embrace the strip within the stitch, not passing the needle through the same at all, as will be easily understood. I prefer, however, for reasons of strength and durability, to follow the plan illustrated in Fig. 3. After all the strips of fur are thus secured upon the fabric by means of a mechanically-produced stitch of the proper degree of looseness, as set forth, I smoothen the article by stretching and rubbing the same sufficiently to draw all the stitches taut, and to flatten or straighten out the fabric along the several lines of stitching, and this being effected the article may be considered finished and ready for the market; but while in this condition the article still presents a certain stiffness, and is not as pliable and as soft to the touch as is desirable with most goods of this class.

I have discovered a means of great simplicity to remove this fault. This consists in passing again over the back of the finished article a sad-iron or metal roller heated rather to a higher degree than is necessary for the similar operation hereinbefore described. I have formed a theory in regard to the result thus obtained which I believe to be correct, and I will state the same; but it is well understood that I do not base the validity of my claim to this portion of the process—viz., giving to the article the required pliability by means of the application of heat, as described—upon the correctness of my theory, as said theory may possibly be proven to be erroneous, while the beneficial results of this portion of the process have been established beyond dispute by the experiments which I have made. I believe that the stiffness of the article after it comes from the sewing-machine and after the fabric is straightened out and the stitches are drawn taut by stretching is due to the presence of the layer of paste upon the lower side of each strip of fur, applied at a previous stage of the process, as hereinbefore described, and that the application of a higher degree of heat than has been used to cause the gutta-percha to act as a cement causes that material to become sufficiently liquid to partially penetrate the layer of paste, and thus destroy the hardness of the latter, and as the gutta-percha, after having once become softened to a certain degree by heat, does not change back to a solid or hard condition, the pliability thus imparted to the article forms a permanent quality thereof and increases its value and usefulness.

Although I have throughout this specification and in the claims called the web *c* a fabric, it will be understood that leather or any suitable analogous matarial may be used instead.

I claim as my invention—

1. That improvement in the art of taping furs which consists in preparing the skins for subsequent operations by stretching the same in a moist condition, and coating the back or flesh side thereof with one or more layers of stiffening or size and allowing the same to dry while in the stretched condition, substantially as set forth.

2. That improvement in the art of taping furs which consists in separating the cut strips of fur from one another along their entire length at one operation, while maintaining the parallelism between the strips being thus separated, substantially as set forth.

3. That improvement in the art of taping furs which consists in mechanically sewing the strips of fur to a fabric by a thread running loosely from the thread-spool to the sewing-machine needle, thereby producing loose or untightened stitches, which permit the strips to lie smoothly on the fabric, substantially as set forth.

4. That improvement in the art of taping furs which consists in mechanically sewing the strips of fur to a fabric by a thread running loosely from the thread-spool to the sewing-machine needle, passing the needle with its loose thread through the edges of the strips and bights or bends of the fabric, and partially tightening or drawing up the stitches by the friction incidental to the passage of the thread through the strips and fabric, but leaving the stitches sufficiently loose to permit the strips to lie smoothly on the fabric, substantially as set forth.

5. That improvement in the art of taping furs which consists in cementing the strips of fur upon a fabric, then further securing said strips upon the fabric by sewing, then stretching and rubbing the article thus produced, and finally applying heat thereto, substantially in the manner herein set forth.

6. The improved process of taping furs, which consists in first coating the skins with one or more layers of stiffening or size, then cutting the same into strips, then separating these strips the required distance apart without completely destroying the interwoven condition of the hairs, then cementing the same under the application of heat upon a web of fabric by means of an interposed sheet of gutta-percha, then further securing the strips upon the fabric by means of sewing, then stretching and rubbing the article produced, and finally exposing the same again to the action of heat and slight pressure, all in the manner and for the purposes set forth.

7. As a new article of manufacture, a fur composed of narrow strips of fur secured at suitable distances apart upon a fabric by means of loose sewing-machine stitches without subjecting the needle-thread to mechanical tension, as and for the purposes herein specified.

8. As a new article of manufacture, a fur composed of narrow strips of fur, the skin of said strips being separated by interstices of suitable width, while the interwoven condition of the hairs is not completely destroyed, a web of fabric and a sheet of gutta-percha interposed between said fabric and the strips of fur, and caused to act as cement between the two by the application of heat, the strips of fur being further secured to the fabric by loose stitches, such as are produced on sewing-machines without subjecting the needle-thread to mechanical tension, all as herein set forth.

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