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METHOD FOR SHRINKING AND FINISHING WOOLEN AND OTHER FABRICS.

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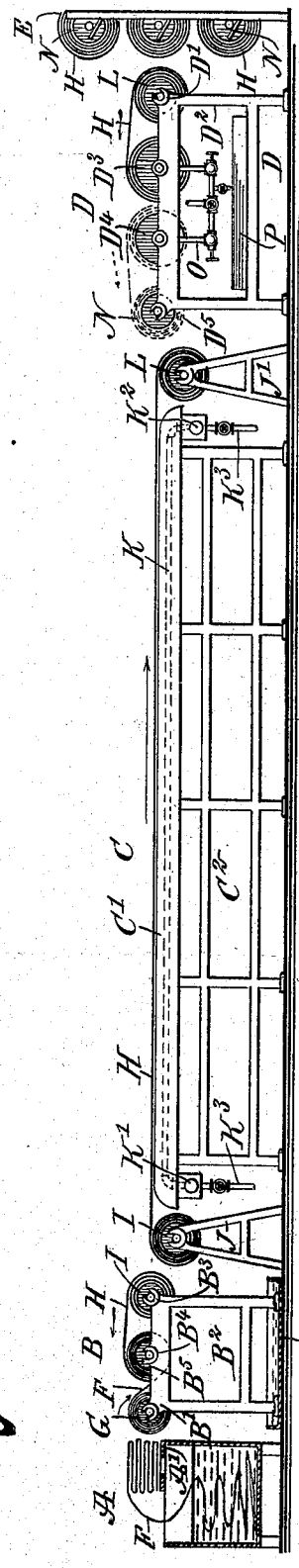

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METHOD FOR SHRINKING AND FINISHING WOOLEN AND OTHER FABRICS.

No. 885,664. Specification of Letters Patent. Patented April 21, 1908.

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To all whom it may concern:

Be it known that I, FRANCIS IRVING BURGHER, a citizen of the United States, and a resident of the city of New York, Stapleton, Staten Island, borough of Richmond, in the county of Richmond and State of New York, have invented a new and Improved Method for Shrinking and Finishing Woolen and other Fabrics, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved method and apparatus for shrinking and finishing woolens and similar textile fabrics in a very quick, simple and comparatively inexpensive manner, at the same time producing an exceedingly fine and permanent finish and without danger of disturbing the color in case the dye used is not absolutely fast, the finish being free of creases or other undesirable marks.

The method consists essentially in rolling up a roll of a dry woolen fabric with a roll of a wet dampening sheet, to moisten the woolen fabric by moisture from the said wet sheet; then unrolling the fabric and the dampening sheet and passing the same in opposite directions and re-rolling the same, then unrolling the woolen fabric and passing it in open width onto a heated surface and with the face of the fabric in contact with the heated surface, to dry the fabric and to set the face fibers, and finally sponging the dry fabric.

In order to carry this method into effect, use is made of an apparatus such as shown in the accompanying drawing, in which the figure is a side elevation of the apparatus.

The apparatus shown consists essentially of the following instrumentalities, namely, a saturating tank A, a rolling-up device B, a drying apparatus C, a sponging device D, and a rack E. The tank A is filled with water in which the dampening sheet F, preferably of cotton, is immersed in open width, and when properly saturated, is lifted up, fold by fold, and placed on draining slats A′ arranged on the top of the tank A, to allow the surplus water to drain back into the tank A. The dampening sheet F is now rolled up on a roller G adapted to be placed in suitable bearings B′ arranged on one end of the frame B^2 of the rolling-up device B. The woolen fabric H to be shrunken is first opened out in a loose pile in open width, and is then rolled up on a roller I, removably journaled in bearings B^3 arranged on the front end of the frame B^2 opposite the bearings B′. On the frame B^2, between the bearings B′ and B^3, are arranged bearings B^4 for a roller B^5, on which both the woolen fabric H and the dampening sheet F are rolled up together in alternate layers, so that the moisture contained in the dampening sheet passes by capillary attraction into the layers of the dry woolen fabric H, to uniformly and thoroughly moisten the woolen fabric. Any water that may drip off from the rolled up sheet F and fabric H falls into a suitable drip-pan B^6. When this has been done the woolen fabric H and the dampening sheet F are unrolled from the roller B^5 and re-rolled on the rollers I and G, respectively. The dampening sheet F can then be re-used by first unrolling it from the roller G and returning it to the tank F for re-saturation.

The roller I, with the moistened woolen fabric H rolled up thereon, is now transferred from the bearings B^3, to bearings on a stand J arranged adjacent to one end of the heated surface C′ of the drying apparatus C, mounted on a suitable frame C^2. The heating surface C′ is preferably in the form of a long shell of copper or like material, and rounded off at the ends, and underneath the heating surface C′ is arranged a heating device, preferably in the form of steam pipes K connected, at their ends, with heads K′ and K^2 located under the ends of the heating surface C′, as plainly shown in the drawing. The heads K′ and K^2 are connected by inlet pipes K^3 with a boiler or other source of steam supply, and the heads K′ and K^2 are also provided with suitably drain cocks or traps (not shown) for drawing off the water of condensation. The lower portions of the pipes K and the heads K′ are preferably covered with or embedded in asbestos or other non-heat-conducting material, to reduce radiation or loss of heat to a minimum.

By the arrangement described steam from the boiler or other suitable source of supply can pass into the pipes K, so that the heat radiating from the upper portions of the pipes K heats the heating surface C′ to the desired temperature.

A portion of the woolen fabric H corresponding to about the length of the heating surface C′ is now unrolled from the roller I and is passed over the heating surface C′ in the direction of the length thereof and with the face of the fabric downward and in contact with the heating surface C′. This ex-

tended portion of the fabric H is now left in contact with the heating surface C′ until the portion is sufficiently dry and in proper condition for the subsequent shrinking process. The dried portion of the fabric is now rolled up on a roller L, removably journaled in a stand J′ arranged adjacent to the farther end of the heating surface C′. By this operation another wet portion of the woolen fabric H is passed over the heating surface C′, to be dried in the same manner as the first portion, and then this second dried portion is rolled up on the roller L. This operation is repeated until the entire piece of the fabric H has been dried and wound up on the roller L. The roller L with the dried fabric H rolled up thereon is now transferred from the stand J′ to bearings D′ arranged on one end of the frame D^2 of the sponging device D. This device may be of any approved construction, preferably, however, like the steaming apparatus for cloth for which Letters Patent of the United States No. 745,321 were granted to me December 1, 1903. The sponging device consists essentially of steam cylinders D^3 and D^4 journaled on the frame D^2, so that the dried fabric H can be unwound from the roller L and first wound up on the cylinder D^3, from which the cloth is unwound and wound up on the other cylinder D^4, to then be unwound therefrom and wound up on a roller N removably journaled in bearings D^5 arranged on the frame D^2. The cylinders D^3 and D^4 are supplied with dry steam through suitably valved pipes O, and below said cylinders D^3 and D^4 is arranged a drip-pan P.

After the cloth has been subjected to the action of the dry steam in the cylinders D^3 and D^4, then the cloth is wound up on the roller N, which is then transferred to the rack E. The roller N with the fabric H thereon is left on the rack E a sufficient length of time to properly dry, cool and re-finish. When the cloth is properly finished, it is ready to be measured, cut, or re-rolled.

From the foregoing it will be seen that the woolen fabric H to be treated is first moistened by being rolled up with the wet dampening sheet F, and then the fabric H in open width is heated with the face of the fabric in contact with the heating surface C′, so that a firm setting of the fibers takes place. The dried fabric is then subjected to the action of dry steam in the same cylinder, with a view to sponge the fabric without applying pressure, and then the latter, while rolled up, is allowed to dry, cool and re-finish on the rack E.

It is understood that by the method described a large amount of woolen piece goods can be treated in a comparatively short time, and without danger of leaving any creases or other marks on the fabric, as the latter, during the entire process, is not folded on boards or pressed, as heretofore practiced. It will also be noticed that the entire method can be readily carried out without the employment of skilled labor; besides, the apparatus used is very simple and comparatively inexpensive.

By subjecting the fabric to the action of the uniformly heated surface C′ in the manner described, a more even shrinkage throughout the length of the piece of fabric is obtained, the amount of the shrinkage being readily controlled by the operator in charge; that is, by increasing or decreasing the length of time the fabric is in contact with the heating surface C′.

By subjecting the fabric to the action of dry steam on the cylinders D^3 and D^4, a steam finish is had which is not only permanent, but gives the fabric a very desirable luster.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. The herein-described method for shrinking and finishing woolen and other fabrics, consisting in rolling up a dry woolen fabric with a wet dampening sheet to moisten the dry woolen fabric by moisture from the wet dampening sheet, then heating and drying the wet woolen fabric in open width, and finally sponging and finishing the dried woolen fabric by subjecting it to the action of dry steam while being rolled up.

2. The herein-described method for shrinking and finishing woolen and other fabrics, consisting in saturating a fabric sheet to form a dampening sheet, then rolling this sheet up with the dry woolen fabric to moisten the latter by moisture absorbed from the wet dampening sheet, then unrolling the dampening sheet and the wet woolen fabric, then heating and drying the wet woolen fabric in open width, then rolling up the dried woolen fabric, and simultaneously subjecting it to the action of dry steam to sponge and finish the woolen fabric.

3. The herein-described method for shrinking and finishing woolen and other fabrics, consisting in rolling up a dry woolen fabric with a wet dampening sheet to moisten the dry woolen fabric by moisture from the wet dampening sheet, then heating and drying the wet woolen fabric in open width, then sponging and finishing the dried woolen fabric by subjecting it to the action of dry steam while being rolled up, and finally drying, cooling and re-finishing the woolen fabric while rolled up.

4. The herein-described method for shrinking and finishing woolen and other fabrics, consisting in saturating a fabric sheet to form a dampening sheet, then rolling this sheet up with the dry woolen fabric to moisten the latter by moisture absorbed from the wet dampening sheet, then unrolling the dampening sheet and the wet woolen fabric, then heating and drying the wet woolen fabric in