(No Model.)

F. STINER & E. R. DARLING.

ART OF DRYING FABRICS.

No. 426,970. Patented Apr. 29, 1890.

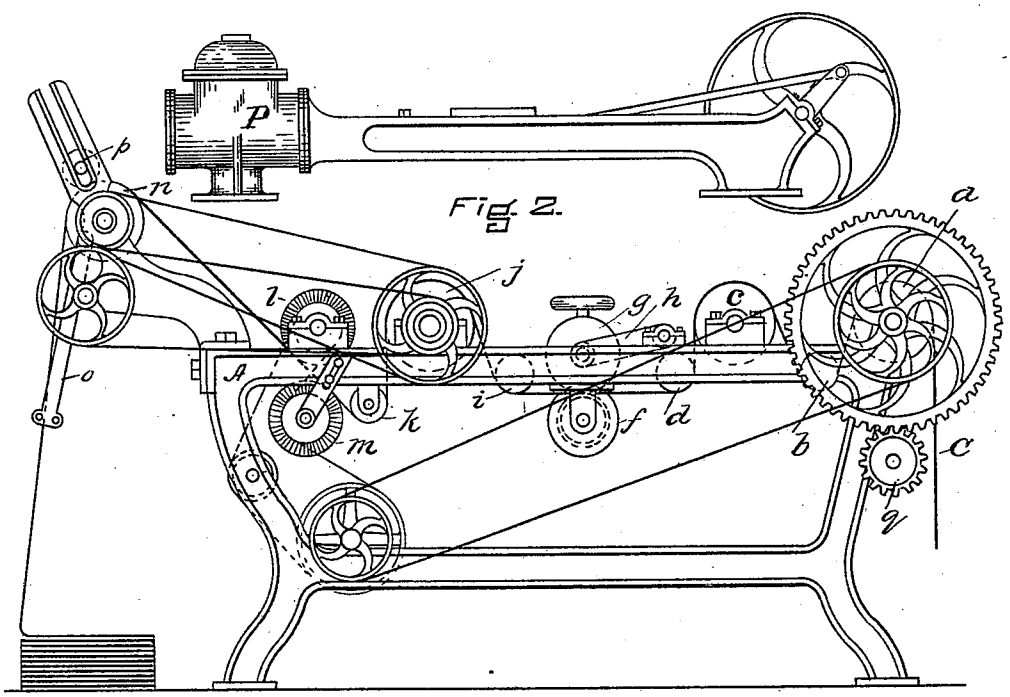


Fig. 2.

Fig. 1.

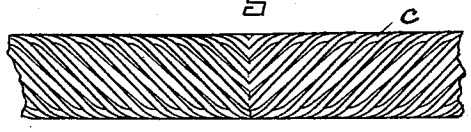


Fig. 3.

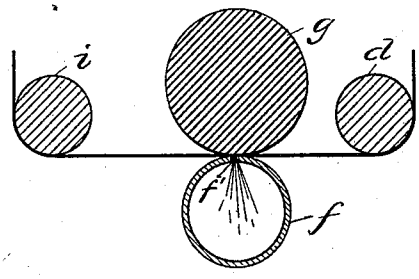


Fig. 4.

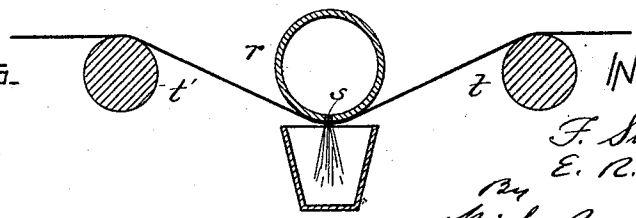


Fig. 5.

WITNESSES.

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UNITED STATES PATENT OFFICE.

FRANK STINER AND ESEK R. DARLING, OF NORTH MONSON, MASSACHUSETTS.

ART OF DRYING FABRICS.

SPECIFICATION forming part of Letters Patent No. 426,970, dated April 29, 1890.

Application filed July 19, 1888. Serial No. 280,434. (No model.)

To all whom it may concern:

Be it known that we, FRANK STINER and ESEK R. DARLING, of North Monson, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in the Art of Drying Fabrics, of which the following is a specification.

Our invention relates to the art of extracting water from fabrics, and has for its object the provision of improvements whereby the fabric under treatment may have the water therein extracted therefrom without damage to the face of the goods, resulting from the "bleeding" of the colors in the "backing"—a thing very likely to happen under the commonly-employed modes of procedure, in which squeeze-rolls or centrifugal extractors are used, and where the backing is composed of cheap stock cheaply dyed.

Our invention consists of the improvement in the art of extracting water from fabrics, which comprises stretching or spreading the fabric and drawing or forcing a current of air through the same from the face or "right" side through the backing or wrong side, carrying the water in the goods out with said current of air.

Our invention also consists of the improvement in the art of treating wet fabrics, which comprises stretching or spreading the fabric, drawing or forcing a current of air through the same from the face or right side through the backing or wrong side to partially dry the same, brushing the fabric to lay the nap, and finally folding the fabric or forming the same into a roll.

Though variously-constructed means may be employed in carrying out our improvements, and though our present invention is in no way limited to means of any form or construction, in order that a full and clear understanding may be had of the invention, reference is made to the accompanying drawings, making a part of this specification, which drawings show at least one machine or means whereby we are enabled to practice our improvements, the said machine forming the subject of our application for patent, Serial No. 279,403, filed July 9, 1888.

In the drawings, Figure 1 is a side elevation of a machine upon which our invention may be carried out. Fig. 2 is a side view of a pump which may be used in connection with the machine shown in Fig. 1. Fig. 3 is a plan view of a portion of the stretch-roll used in the machine. Fig. 4 is a sectional view illustrating the invention as practiced on the machine shown in Fig. 1. Fig. 5 is a sectional view illustrating the invention as it may be carried out or practiced by means somewhat different from that shown in the other figures.

The same letters of reference designate the same parts in all of the views.

A designates the frame for supporting the various parts of the machine, the cloth C in passing through which enters on the roller *a*, passing from thence under the carrier or tension roller *b*, thence up over the corrugated stretch-roller *c*, by which it is spread or stretched laterally to remove all wrinkles therefrom. From stretch-roller *c* (the construction of which is illustrated in Fig. 3) the cloth passes under carrier or tension roller *d*, thence over pipe *f*, provided on its upper side with a slot *f'*. (See Fig. 4.) As the cloth passes over the slotted pipe *f* the water therein is drawn out therefrom from its right or face side, which may be supposed to be up, down through the wrong side or backing, down through slot *f'*, and out through pipe *f*, by means of the suction created by a pump P or other similar device connected with said pipe *f*.

g designates a weighted roller journaled in the free ends of arms *h*, the opposite ends of which are pivotally connected with the frame A, which roller *g* rests upon the cloth at the point where it touches upon the pipe *f* in passing thereover, for the purpose of holding the cloth closely down on said pipe. From the pipe *f* the cloth passes under the carrier or tension roller *i* up over the draft-roller *j*, thence down under the carrier or tension roller *k*, and upward between the brush-rollers *l m*, which brush or lay the nap on the cloth, and thence over roller *n*, and finally down through folder *o*, if it is to be folded, or around roller *p*, if it is desired to form it into a roll.

The several rollers and other parts to which

it is necessary to impart motion are operated by means of gears or belts and pulleys, all suitably constructed and arranged and mediately or immediately driven by the main shaft *q*, Fig. 1.

Instead of drawing the water from the fabric by means of suction, as has been described with reference to Figs. 1 to 4, inclusive, it may be driven out therefrom by means of a current of air blown or forced through the fabric from the right side or face through the wrong side or backing, as indicated in Fig. 5, in which figure *r* designates a pipe provided with a slot *s*, around or in contact with the slotted portion of which pipe the fabric C passes from guide or tension roller *t* to a like roller *t'*. Air pumped or forced into pipe *r* will be driven out through the slot *s* and the fabric passing thereover, carrying the water in said fabric with it.

It is to be particularly noted that our improved method is also adapted to the washing of fabrics where the latter are subjected to a bath of soap and water, and may then be spread and have the soap and water therein drawn therethrough or driven out therefrom by a current of air, as hereinbefore described, which action will effect a thorough washing or cleansing of the fabric without any of the injurious or objectionable effects which attend the use of "squeeze-rolls," where some kinds of cloth—as worsteds, for instance—are very liable to wrinkle, and the wrinkles are so pressed as to become almost, if not quite, fixed in the goods. Again, in fulled fabrics, where the fulling takes place to a greater extent in the center than at the edges of the piece, and when such fabrics are spread and passed between squeeze-rolls, the cleansing or washing operation takes place to a greater extent in the center, where the cloth is thicker or heavier, than at the edges, where it is lighter or thinner—in other words, the goods are not evenly washed or cleansed. By our process, however, the action upon all parts of the cloth is even, the thick or heavy and thin or light portions being uniformly washed.

It is also to be particularly noted that our improved method may be employed in "piece" dyeing, in forcing or drawing the dyes through the fabric, so that the whole piece or fibers of the piece may be thoroughly and uniformly impregnated with the dye.

Means of various forms may be employed in carrying out our improvements; but the foregoing description is believed to be sufficient to enable those skilled in the art to practice the invention.

A number of advantages are gained by our method of expelling the water, and among these are the ability to treat fabrics having a backing of inferior stock poorly dyed, and which when wet would "bleed" badly, and so detrimentally affect or change delicate colors on the face of the goods, and cloud or streak it without thus damaging the goods, for it will be observed that the water and any coloring-matter are drawn through from face to back, and the face is left clear and its colors bright.

By our improvements damage to the goods from wrinkling or from the bleeding or "running" of colors in the backing is entirely avoided, and the work otherwise is performed in a more excellent manner than by the methods usually practiced in extracting water from fabrics.

Having thus fully explained our improved process and the manner of performing the same, we would have it understood that what we claim is—

1. The improvement in the art of extracting water from fabrics, which consists in spreading or stretching the fabric and drawing or forcing a current of air through the same from the face or right side through the backing or wrong side, thereby to carry the water or any free coloring away from the face and into and through the backing, substantially as set forth.

2. The improvement in the art of treating wet fabrics, which consists in spreading or stretching the fabric and drawing or forcing a current of air through the same from the face or right side through the backing or wrong side to partially dry the same, brush-laying the nap, and finally folding or rolling the cloth, substantially as set forth.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 9th day of July, A. D. 1888.

FRANK STINER.
ESEK R. DARLING.

Witnesses:
CHAS. KOLLER,
JOHN A. GRANT.