Nov. 30, 1954 A. S. JONES 2,695,653

METHOD AND MEANS FOR PROVIDING WRINKLES IN TEXTILE FABRICS

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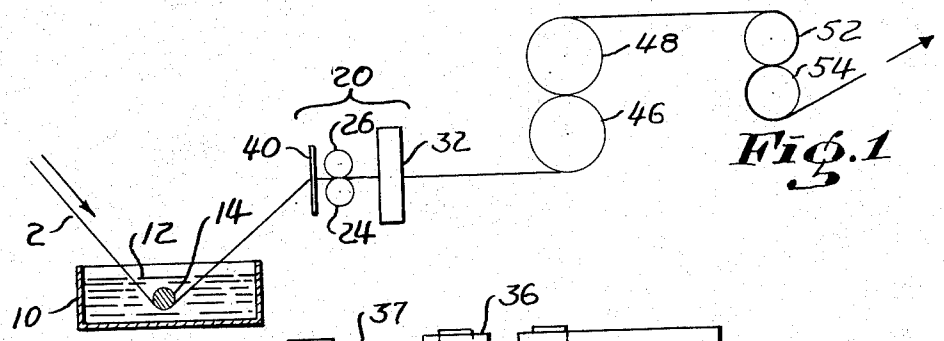


Fig. 1

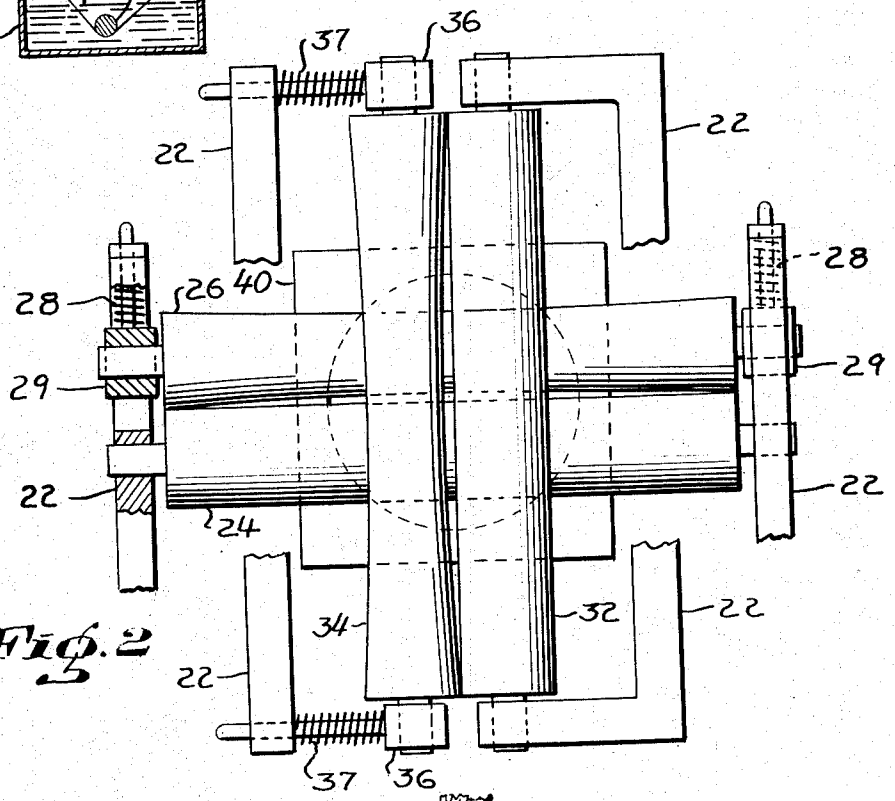


Fig. 2

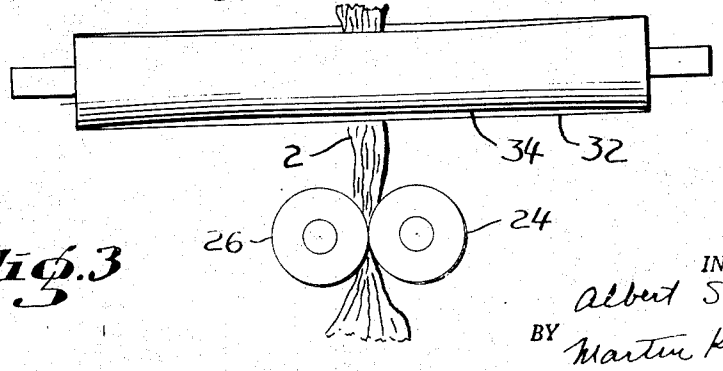


Fig. 3

INVENTOR.
Albert S. Jones
BY Martin Kirkpatrick
ATTORNEY

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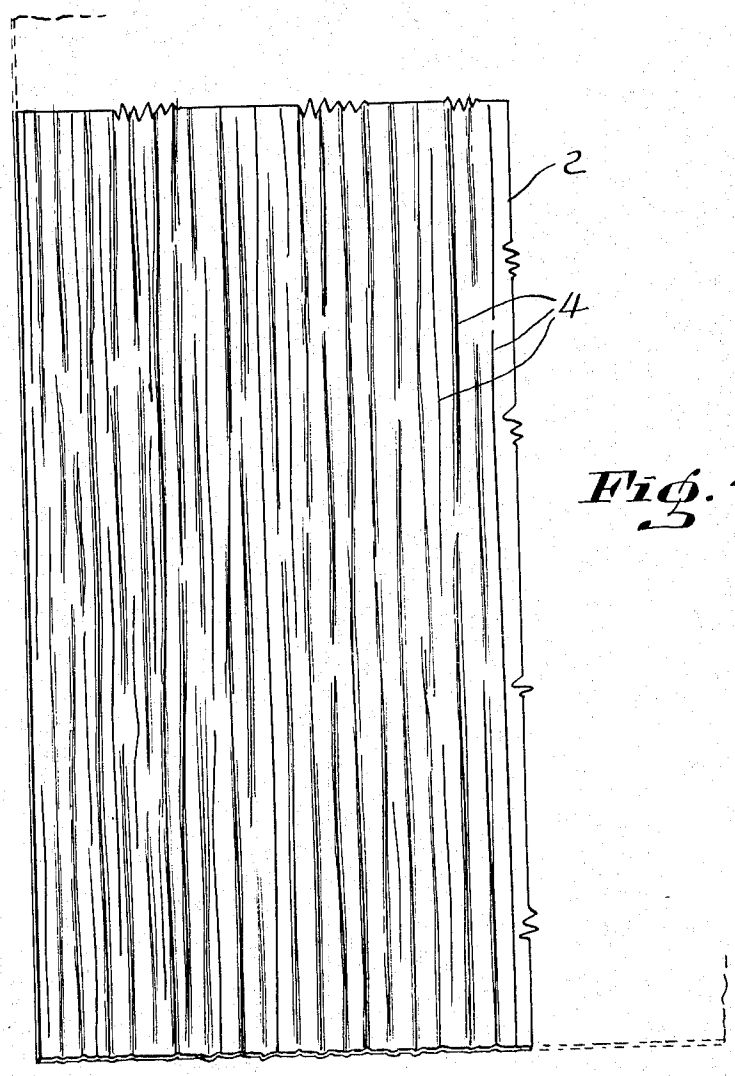


Fig. 4

INVENTOR.
Albert S. Jones
BY Martin Kirkpatrick
ATTORNEY

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METHOD AND MEANS FOR PROVIDING WRINKLES IN TEXTILE FABRICS

Albert S. Jones, Webster, Mass., assignor to Cranston Print Works Company, Cranston, R. I., a corporation of Rhode Island

Application February 26, 1952, Serial No. 273,452

5 Claims. (Cl. 154—30)

This invention relates to textile fabrics and more particularly to a novel method and means for providing wrinkles in textile fabric as well as to a novel wrinkled textile fabric.

An object of the present invention is to provide wrinkled fabrics of highly decorative appearance by a surprisingly simple apparatus and process which does not require highly skilled manipulation or difficult processing operations.

Another object of the present invention is to produce a novel, wrinkled textile fabric having wrinkles fast to washing, so that said fabric need not be ironed after each washing to provide an attractive appearance.

For the purpose of more fully explained my invention, reference is made to the following drawings, in which,

Fig. 1 is a diagrammatic view of a preferred embodiment of the apparatus of my invention suitable for carrying out my novel process;

Fig. 2 is an enlarged rear elevational view of a portion of the apparatus of Fig. 1;

Fig. 3 is a diagrammatic plan view of the portion of the apparatus of Fig. 2; and

Fig. 4 is an isometric view of the novel wrinkled textile fabric of my invention.

I have found that it is possible to produce substantially unidirectional wrinkles in an extended sheet of textile fabric by pressing a moistened sheet of textile fabric in a plurality of directions perpendicular to the longitudinal axis of said sheet, and preferably thereafter squeezing the wrinkled fabric between high pressure mangle rolls and passing it around suitable dry cans to dry the fabric and set the wrinkles. The moistening agent may be water containing a sizing agent such as starch or a fixing agent such as any one of a number of resinous materials known to the art, the latter providing an attractive wrinkled textile fabric in which the wrinkles are fast to washing. Since the wrinkles in my novel textile fabric are unidirectional, that is, substantially but not all absolutely parallel to one another, and are of random lengths and spacings from one another substantially uniformly distributed throughout the fabric sheet, they provide a most attractive and unusual finish, and, when the fabric includes a resinous fixing material, one which may be washed repeatedly without destroying the effect. The permanent wrinkles provided by the fixing agent tend to conceal other wrinkles produced in the fabric as by subsequent washings, and hence it is not necessary to iron or otherwise finish my novel fabric after each subsequent washing.

Referring to Fig. 1, an extended sheet of textile fabric **2**, preferably gathered to form a "rope" of textile fabric, is passed into a tank **10** containing a moistening agent **12**, the usual lease rod **14** being provided in said tank beneath the level of the moistening agent **12** so that the entire sheet of fabric **2** will be moistened; the wet sheet of fabric is then passed to my novel wrinkler, generally designated as **20**, which presses the gathered moistened sheet of textile fabric **2** in two directions substantially but not absolutely perpendicular to the longitudinal axis of the axis of the gathered sheet of textile fabric **2** passing through the wrinkler **20** to form wrinkles **4** therein, the action of said wrinkler, though producing generally unidirectional wrinkles, serving randomly to produce at least a portion of them in slightly non-parallel relation to one another, as well as to produce said wrinkles **4** of random lengths and spacings, all as best shown in Fig. 4.

My novel wrinkler, as best shown in Figs. 2 and 3, includes two pairs of cooperating fabric pressing rollers rotatably mounted on frame **22** of the apparatus, said pairs of rollers being mounted on behind the other at an angle, preferably 90°, to one another and substantially perpendicular to the longitudinal axis of the sheet of textile fabric **2** passing through the wrinkler **20**. The first pair of said rollers includes a cylindrical lower roller **24** mounted by suitable bearings in frame **22** for rotation about a horizontal axis, and a concave upper roller **26** mounted vertically above such lower roller **24** cooperating therewith to press the sheet of fabric therebetween. At least one roller of said pair, upper roller **26**, is resiliently mounted to press toward said lower roller **24**. Such resilient mounting includes springs **28** mounted at one end in fixed position relative to frame **22** and at the other end arranged to press against the bearings **29** of said upper roller **26**, said bearings being adapted for sliding movement toward and away from lower roll **24**.

The second pair of rollers is mounted relatively closely following the above described first pair of rollers, and, similarly to said first pair of rollers, includes a cylindrical roller **32** and a concave roller **34**, the latter being resiliently mounted by movable bearings **36** and springs **37** to press said concave roller resiliently toward said cylindrical roller. The second pair of rollers is mounted to rotate about vertical axes, so that the pairs of rolls are at an angle, conveniently 90°, to one another, the axes of each pair of rollers lying in planes substantially parallel to one another and perpendicular to the longitudinal axis of the sheet of textile fabric. This arrangement provides a pair of laterally extended openings one behind the other and perpendicular to the axis of said sheet, said openings being at an angle to one another. The resilient mounting of at least one roller of each pair of rollers permits the passage of seams, such as are formed when two sheets of textile fabric are tied together, through my novel wrinkler without danger of damaging it, while the concave rollers **26** and **34** aid in guiding the sheet through the wrinkler. I prefer that substantial pressure be applied to said fabric by each of said pairs of rolls **24** and **26**, and **32** and **34**, said pressure being of the order of one half ton for the purpose of removing as much of the moistening agent as possible. A guide plate **40** having a central circular opening is provided in front of the first pair of rollers to aid in gathering the sheet of textile fabric before it passes into my novel wrinkler, said plate **40** being mounted on the frame **22** in any suitable manner substantially centrally of both of the pairs of rollers.

After the sheet of textile fabric **2** has passed through my novel wrinkler, the wrinkles **4** therein are preferably set by passing the textile fabric around and between a mangle comprising a pair of rolls, lower roll **46** and upper roll **48**, to remove the major part of the remaining moistening agent, a pressure of several tons being used on said rolls. The wrinkler rollers, though squeezing a large part of the moistening agent from the sheet of textile fabric, leave it in a moist condition, the setting of the wrinkles **4** being much improved by pressing the sheet of textile fabric under high pressure in the presence of moisture. The textile fabric is then passed to one or more pairs of drying cans having cylinders **52** and **54** heated to a suitable temperature as known to the art to completely dry the moistened textile fabric as it passes around and between them. In the case of fixing or stabilizing agents such as, for example, a large class of resinous materials and resin components known to the art, the heated cylinders **52** and **54** serve to react the fixing agent to provide wrinkles **4** permanently fast to washing, the desirable temperature of said cylinders being determined by the particular sizing or fixing agent employed, as is well understood in the art.

It will thus be seen that I have provided a novel process for wrinkling textile fabrics to produce a novel wrinkled fabric, as well as apparatus for carrying out said process. My process, though particularly suitable for cotton or other cellulosic textile fabrics such as rayon, may be employed on mixtures including animal fibers, or in some instances, on fabrics composed entirely of animal fibers, for example, wool. I have pointed out a pre-

ferred practice of my novel process, and it will be apparent to those skilled in the art that various modifications may be made within the spirit of my invention and the scope of the appended claims.

I claim:

1. A fabric wrinkling apparatus for producing unidirectional wrinkles in textile sheet fabric including fabric sizing means, means for forming unidirectional wrinkles in the fabric comprising means for gathering the sheet into rope formation, pressing means for pressing the extended sheet of the gathered rope fabric in a plurality of directions at an angle to one another perpendicular to the longitudinal axis of the extended rope of fabric and substantially parallel to the longitudinal axis thereof to form the unidirectional wrinkles, and pressure roll means for setting the wrinkles in the fabric.

2. A method of providing unidirectional longitudinal wrinkles in an extended sheet of textile fabric, comprising treating said fabric with a sizing agent, and pressing the sized fabric while in gathered rope form inwardly in a plurality of directions at an angle to one another and perpendicular to the longitudinal axis of the fabric to form wrinkles in the fabric substantially parallel to the longitudinal axis thereof.

3. A method of providing unidirectional longitudinal wrinkles fast to washing in an extended sheet of textile fabric comprising treating said fabric with a fixing agent, pressing the fabric while in gathered rope form in a plurality of directions at an angle to one another and perpendicular to the longitudinal axis of the gathered rope to form wrinkles in the fabric substantially parallel to the longitudinal axis thereof, pressing said wrinkled fabric at high pressures and treating the fixing agent to fix the wrinkles in the fabric.

4. A fabric wrinkling apparatus for producing unidirectional wrinkles in textile fabric including a frame, a first pair of cooperating fabric pressing rollers rotatably mounted on said frame to press fabric therebetween in a first direction substantially perpendicular to the longitudinal axis of a sheet of textile fabric passing between said rolls, a second pair of cooperating fabric pressing rollers rotatably mounted on said frame following said first pair of rollers to press fabric therebetween in a second direction substantially perpendicular to said longitudinal axis, the axes of said pairs of rollers being at an angle to one another, and pressure roll means for setting said wrinkles in said fabric, at least one roller of each of said pairs of cooperating fabric pressing rollers being concave, and at least one roller of each of said pairs being resiliently pressed towards said other roller.

5. A method of providing unidirectional longitudinal wrinkles fast to washing in an extended sheet of textile fabric which includes the steps of gathering an extended sheet of textile fabric into rope formation, treating the gathered rope fabric with a fixing agent, pressing the fabric while in gathered rope form in a plurality of directions at an angle to one another and perpendicular to the longitudinal axis of the gathered rope to form wrinkles in the fabric substantially parallel to the longitudinal axis thereof, pressing the wrinkled fabric at high pressures, and treating the fixing agent to fix the wrinkles in the fabric.

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