Sept. 25, 1956 G. H. WOOD, JR 2,763,914

PROCESS FOR PRODUCING WRINKLE FINISH FABRIC

Filed Feb. 17, 1953

Fig. 1.

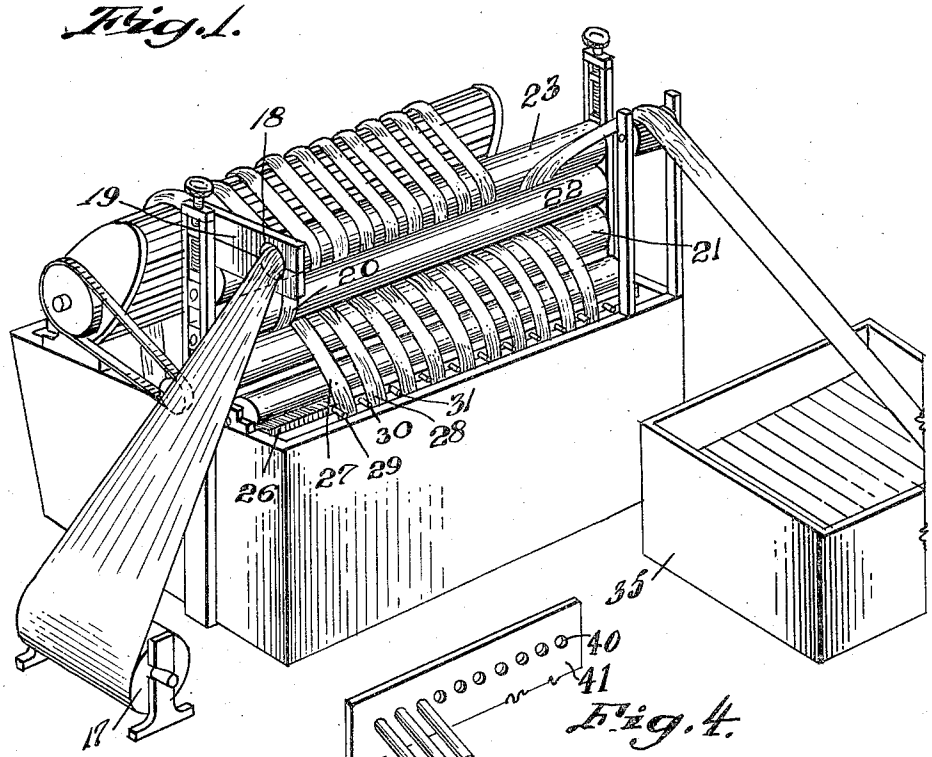


Fig. 4.

Fig. 2.

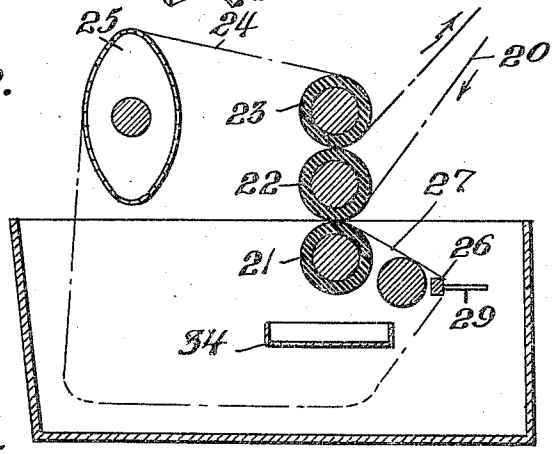
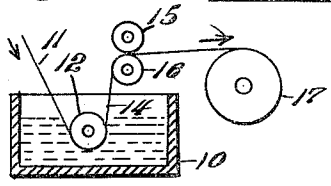


Fig. 3.



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United States Patent Office 2,763,914
Patented Sept. 25, 1956

2,763,914

PROCESS FOR PRODUCING WRINKLE FINISH FABRIC

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Application February 17, 1953, Serial No. 337,336

4 Claims. (Cl. 28—74)

This invention relates to the method by which a wrinkle finish is provided on cotton or other textile fabrics.

Heretofore roughened surfaces have been provided on certain fabrics which go into making house dresses, beach coats, or for certain sportswear so that ironing of these articles of clothing will not be required after washing. In many instances there is a resin utilized in the preparation of such a finish, which is padded on to the surface of the fabric and is then dried, which requires a caustic treatment in order to prevent brittleness. In the use of such a caustic treatment, from 15 to 20 per cent shrinkage of the cotton cloth occurs.

One of the objects of this invention is to provide such a finish by a procedure which will eliminate necessity for the use of caustic treatment so that the shrinkage may be reduced or almost eliminated.

Another object of the invention is to simplify the procedural operation and thus make the processing less costly.

Another object of the invention is to retain creases in the fabric which are placed therein during the finishing and to resist the formation of other creases in the fabric.

With these objects in view and other objects, the invention is more fully set forth as to the steps of procedure necessary in order to accomplish the desired results.

By way of illustration of one mode of operation,

Figure 1 is a perspective view of one of the steps in the process;

Figure 2 is a diagrammatic view of the travel of the fabric to and from the rolls of the machine;

Figure 3 illustrates a padder used for applying the resin prior to the fabric being operated upon as shown in Figure 1; and

Figure 4 is a fragmental perspective view of a modified structure showing a plate having openings therein for use in place of the rolls.

In proceeding with this invention, I apply to the fabric which is to be provided with a wrinkle finish a resin which when cured will assist in maintaining the fabric in the desired form, and before this resin is cured and while in a damp state, I crumple the web of fabric laterally, gathering the same by running the web through a pot eye or the like into rope-like form, although not twisted, and then squeeze or press the fabric in this rope form by passing the same through rolls a number of times, which assists in setting the creases provided by the crumpling in the fabric, and then I heat the fabric when so creased so as to cure the resin and maintain these creases in the fabric. By this operation no caustic, which causes a high percentage of shrinkage, is used, and my residual shrinkage is two per cent or less.

The first step in the operation is to pass the cloth through a padder designated generally **10** wherein the web **11** passes beneath the drum **12** for the application of urea formaldehyde resin thereto. The resin solution is from 10 to 15 per cent strength. The web after so treated and now designated **14** then passes through the squeeze rolls **15** and **16**, which are so set as to squeeze

from the fabric excess liquor and leave in the fabric sufficient solution so that it will have gained from 65 to 80 per cent of its own weight. Thus, one hundred pounds of fabric would gain from sixty-five to eighty pounds of the 10 to 15 per cent resin solution. Upon drying, the dry resin added will be from 6½ to 12 per cent of the dry weight of the fabric. The fabric so treated is then reeled or batched on a beam **17** and left to stand for from two to three hours in order to afford an opportunity for the urea formaldehyde resin to penetrate into the fibers.

This beam **17** is then placed in such position that it may be run through an opening **18** in some sort of a support **19** and which may be referred to as a pot eye so that it will laterally crumple the web, gathering it into a form which I refer to as a rope-like form. Then the rope-like form is passed through a number of rolls so as to squeeze and press it. The apparatus which I have illustrated in Figure 1 is of convenience in performing this operation although intended for a different use and is a usual soaper having a tank beneath the rolls as shown, but there is no liquid contained in the tank for the present use, and it is used in a slightly modified form dry, as it does present the necessary pressing rolls which I desire for performing the pressing step in the process. After passing through the pot eye **18**, the rope, which I will now designate as **20**, passes beneath the center roll **22** of three pressure rolls **21**, **22**, and **23** (see Figure 2), thence through the nip between the rolls **22** and **23** where it is again squeezed, and thence from the upper surface of roll **23** as at **24** to the reel **25**, thence about this reel **25** over the bar **26**, thence again in another path as at **27** between the rolls **21** and **22**, and thence about the same rolls to return in another path **28**, these paths being separated by pins **29**, **30**, **31**, and so forth, extending from the bar **26** so as to separate the courses and complete a series of travels through the pressure rolls. Any liquid which is pressed from the fabric drops into trough **34** which may be drained. The fabric being crumpled into this rope form is thus longitudinally creased, and it will then emerge from the apparatus where it is gathered in a box **35** still in rope form.

The rope in its running through this machine passes at from forty to fifty yards per minute and takes about five minutes to run through the machine. After it is run once through the machine, it is run again through the machine, which takes another five minutes, and at the end of the second run it is left in the box from one to three hours, the result being a very decided longitudinal crease in the fabric.

After it has remained in the box the required length of time, the fabric is hand opened and passed through a machine for drying the same, which passes the cloth from forty to fifty yards per minute where the cloth is exposed to a temperature of 250° to 300° F. for from one to three minutes—the higher the temperature, the shorter the time. The cloth so dried is then cured by subjecting the same in another machine of from 280° to 320° F. for from six to three minutes; that is, if 280° is used, the cloth will be cured for six minutes, whereas if 320° is used, it will be cured for three minutes. The cloth during this curing is in opened web form.

After curing, the web is again reduced to rope form and washed, and then the water is extracted in a centrifugal basket; it is again opened to web form or dried through the same type of machine as above referred to at from 250° to 300° F. for from one to three minutes and is then dry framed and steamed.

By the above operation it is found that shrinkage of two per cent or less occurs and that no caustic treatment is needed.

As an alternative to this use of pressure rolls such as

21, 22, and 23, the web may be passed through a series of pot eyes 40 in plate 41 as shown in Figure 4 which will press the fabric in a crumpled condition as passed therethrough.

I claim:

1. In the process of providing a wrinkle finish on a textile fabric, the steps in the order stated, which comprises adding a precondensate resin to the fabric, while wet laterally crumpling the web into rope form and exerting pressure on the same, then hand opening into web form while wet without lateral stretching, drying and curing the resin.

2. In the process of providing a wrinkle finish on a textile fabric, the steps in the order stated, which comprises adding a solution of urea formaldehyde precondensate resin to the fabric in a dry quantity of from 6½ to 12 per cent of the finished weight of the fabric, while wet laterally crumpling the web into rope form and exerting pressure on the same, then hand opening into web form while wet, drying and curing the resin.

3. In the process of providing a wrinkle finish on a textile fabric, the steps in the order stated, which comprises adding a precondensate resin to the fabric, while wet laterally crumpling the web into rope form and exerting pressure on the same, then opening into web form while wet, drying and curing the resin, and then rope washing, hand opening, and drying.

4. The process of wrinkle finishing a web of textile fabric which comprises adding to the fabric urea formaldehyde precondensate resin of from 10 to 15 per cent strength an amount of from 65 to 80 per cent of the weight of the fabric, batching the same on a beam and letting it stand from two to three hours, laterally crumpling said web by gathering it into rope form, then compressing the same when in said rope form by running through squeeze rolls a plurality of times, letting it stand one to three hours, hand opening the same into a web form, drying for from one to three minutes while traveling at from forty to fifty yards a minute, and then curing for from three to six minutes at a temperature of from 320° to 280°, then rope washing, extracting the moisture, open air drying, framing, and steaming.

References Cited in the file of this patent

UNITED STATES PATENTS

2,121,005	Bener	June 21, 1938
2,144,685	Mellor et al.	Jan. 24, 1939
2,211,841	Voegeli	Aug. 20, 1940
2,577,957	Farnworth et al.	Dec. 11, 1951
2,622,995	Lippert et al.	Dec. 23, 1952