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⑤④ **Apparatus for continuously reducing the weight of fabrics of polyester fibers with alkali.**

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**FR-A-2 313 493  
US-A-3 967 473**

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## Description

### Background of the Invention

The present invention relates to an apparatus for continuously reducing the weight of knitted and woven fabrics of polyester fibers.

In French Patent Specification No. 2,313,493 there is disclosed the treatment of fabric or textile material containing polyester fibers with sodium hydroxide solution to improve the soil release and wettability properties thereof using a continuous process in which the amount of polyester removed is relatively small and is controlled by the limited amount of sodium hydroxide present on the fibers.

This is effected by applying, by for example a padder, to the fabric or textile material an aqueous solution of 70 to 90% by weight based on the weight of the textile material and containing 0.5 to 2.5% by weight of sodium hydroxide, subjecting the padded textile material to steam, using for example a J-box steam chamber, while maintaining the moisture content thereof to at least 35% by weight of the weight of the textile material so as to remove 0.4 to 2.5% by weight of the polyester, and thereafter washing the textile material, using for example a three-zone washer, to remove unreacted sodium hydroxide.

It is an object of the present invention to provide a specific apparatus for carrying out the process generally disclosed in the aforesaid French Patent Specification and which achieves a very uniform weight reduction of the fabric and which obviates undesirably poor reduction or over reduction of the weight of polyester fabric.

According to the present invention, there is provided apparatus, for continuously reducing with alkali the weight of fabric made of polyester fibers, comprising, in series a padder for uniformly applying an alkali solution, that serves as a hydrolyzing agent, to the fabric; a steamer chamber, operating at a temperature of 100°C to 125°C, for promoting the hydrolysis of fabric impregnated with the alkali solution, said steamer chamber being provided with a ceiling and, in an upper portion of the chamber, with indirect steamer pipes for preventing condensation on the ceiling of said steamer chamber, and also being provided with direct steamer pipes for controlling the temperature of said steamer chamber; means for washing the fabric with water in order to remove hydrolyzed products from the fabric, said washing means comprising a plurality of superimposed stages of which at least one comprises a vessel containing water, feed rolls in said vessel for transporting the fabric, squeezing guide bars over which the fabric runs, and holder rolls cooperating with said feed rolls to squeeze the fabric; and a device for drying the fabric.

### Brief Description of the Drawings

Fig. 1 is a plan view schematically illustrating an apparatus according to an embodiment of the present invention; and

Fig. 2 is a side view schematically illustrating the apparatus of Fig. 1.

### Description of Preferred Embodiment

The invention will be further described below in conjunction with the accompanying drawings.

Fig. 1 is a plan view schematically illustrating the apparatus according to an embodiment of the present invention, and Fig. 2 is a side view showing the apparatus of Fig. 1.

In the drawings, reference numeral 1 denotes a vessel, containing an alkali solution, into which fabrics are dipped, and 2 denotes nip rolls made of a rubber. The fabric to be treated is immersed in the alkali solution in the vessel 1, and is nipped through the rolls 2 so that it is impregnated with the alkali solution at a desired pick-up. A steamer chamber 3 accommodates indirect steamer pipes 4 for preventing the formation of dew on the ceiling, direct steamer pipes 5 for adjusting the temperature, and large and small feed rolls 6 for conveying the fabric when it is spread out. In the steamer chamber 3, the temperature can be suitably adjusted over a range of 100°C to 125°C. The fabric, which is hydrolyzed as it goes through the steamer chamber 3 and the weight of which is reduced with alkali, is then introduced into a vessel 7 containing water for washing the fabric, wherein the hydrolyzed products contained in the fabric are removed in a plurality of stages by washing the fabric with water. Feed rolls 8 and squeezing guide bars 9 are provided in the vessel 7, and holder rollers 10 are disposed on the feed rolls 8 to squeeze the fabric by nipping. The fabric, coming from the vessel 7, is then dried as it goes through an ordinary drying machine 11 made up of cylinders.

### Claims

1. Apparatus, for continuously reducing with alkali the weight of fabric made of polyester fibers, comprising, in series a padder (1, 2) for uniformly applying an alkali solution, that serves as a hydrolyzing agent, to the fabric; a steamer chamber (3), operating at a temperature of 100°C to 125°C, for promoting the hydrolysis of fabric impregnated with the alkali solution, said steamer chamber (3) being provided with a ceiling and, in an upper portion of the chamber, with indirect steamer pipes (4) for preventing condensation on the ceiling of said steamer chamber (3), and also being provided with direct steamer pipes (5) for controlling the temperature of said steamer chamber (3); means for washing the fabric with water in order to remove hydrolyzed products from the fabric, said washing means comprising a plurality of superimposed stages of which at least one comprises a vessel (7) containing water, feed rolls (8) in said vessel (7) for transporting the fabric, squeezing guide bars (9) over which the fabric runs, and holder rolls (10) cooperating with said feed rolls to squeeze the fabric; and a device (11) for drying the fabric.

2. Apparatus according to claim 1, wherein the padder (1, 2) is comprised of a vessel (1), into which fabrics are dipped, and nip rolls (2).

## Patentansprüche

1. Vorrichtung zum kontinuierlichen Vermindern des Gewichtes von Geweben aus Polyesterfasern unter Anwendung von Alkali, in Reihe bestehend aus einem Applikationsfoulard (1, 2) zum einheitlichen Aufbringen einer Alkalilösung, die als hydrolysierendes Mittel wirkt, auf das Gewebe; einer Dampfkammer (3), die bei einer Temperatur von 100°C bis 125°C betrieben wird, zum Vorantreiben der Hydrolyse des mit der Alkalilösung getränkten Gewebes, wobei die Dampfkammer (3) mit einem Deckenteil und in ihrem oberen Bereich mit indirekten Dampfrohren (4) zum Unterbinden der Kondensation am Deckenteil der Kammer (3) sowie weiterhin mit direkten Dampfrohren (5) zum Steuern der Temperatur der Dampfkammer (3) versehen ist; aus Mitteln zum Waschen des Gewebes mit Wasser zum Entfernen der hydrolysierten Produkte aus dem Gewebe, wobei die Wascheinrichtung aus einer Vielzahl von übereinanderliegenden Stufen besteht, von denen mindestens eine einen Wasser enthaltenden Behälter (7), Zuführungsrollen (8) in dem Behälter (7) zum Transportieren des Gewebes, Quetschführungsstangen (9), über die das Gewebe läuft, und Halterollen (10) aufweist, die mit den Zuführungsrollen zum Ausquetschen des Gewebes zusammenwirken; und aus einer Einrichtung (11) zum Trocknen des Gewebes.

2. Vorrichtung nach Anspruch 1, wobei der Applikationsfoulard (1, 2) aus einem Behälter (1), in den die Gewebe eingetaucht werden, und aus Quetschwalzen (2) besteht.

## Revendications

1. Dispositif pour réduire en continu à l'aide d'un alcalin le poids d'un tissu constitué de fibres en polyester comprenant en série un foulard (1, 2) pour appliquer uniformément sur le tissu une solution alcaline qui sert comme agent hydrolysant: une chambre à vapeur (3) fonctionnant à une température de 100°C à 125°C pour favoriser l'hydrolyse du tissu imprégné de la solution alcaline, ladite chambre à vapeur (3) étant munie d'un plafond et, dans une partie supérieure de la chambre, de tuyaux (4) amenant indirectement de la vapeur pour éviter la condensation sur le plafond de ladite chambre (3) et étant aussi munie de tuyaux (5) amenant directement de la vapeur pour contrôler la température de ladite chambre à vapeur (3); des moyens de lavage du tissu avec de l'eau de façon à enlever les produits hydrolysés du tissu, les dits moyens de lavage comprenant un pluralité d'étages superposés dont l'un au moins comprend un récipient (7) contenant de l'eau, des rouleaux d'aménés (8) dans le dit récipient (7) pour transporter le tissu, des barres (9) de guidage et de compression sur lesquelles se déplace le tissu, et des rouleaux (10) de maintien coopérant avec les dits rouleaux d'aménés pour comprimer le tissu; et un dispositif (11) pour sécher le tissu.

2. Dispositif selon la revendication 1 dans lequel le foulard (1, 2) est constitué d'un récipient (1) dans lequel des tissus sont plongés, et de rouleaux de pincement (2).

Fig. 1

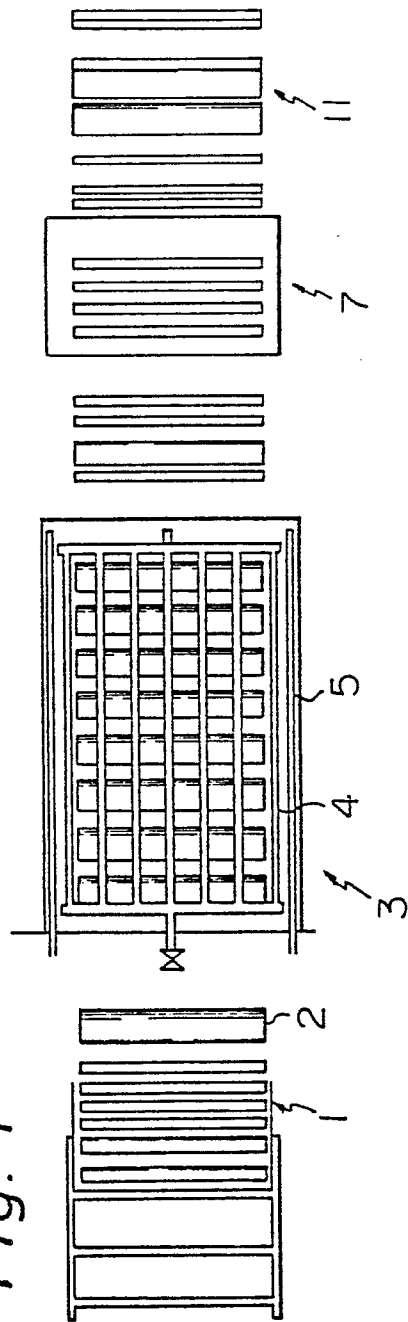


Fig. 2

