May 9, 1933. C. H. MASLAND, 2D 1,907,429

METHOD OF AGEING OR STEAMING PRINTED TEXTILE FABRICS

Filed May 27, 1930

Fig. 1.

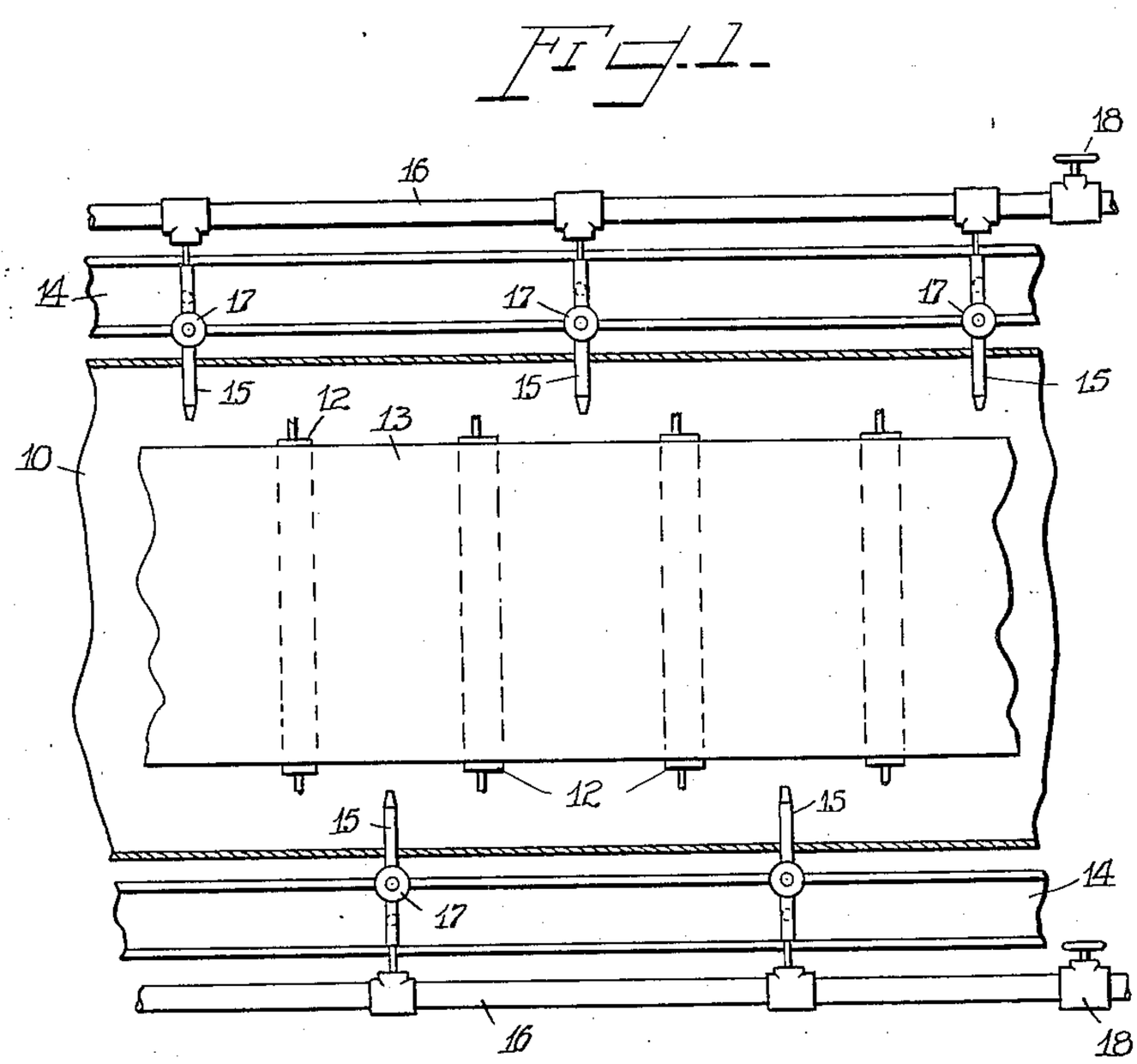
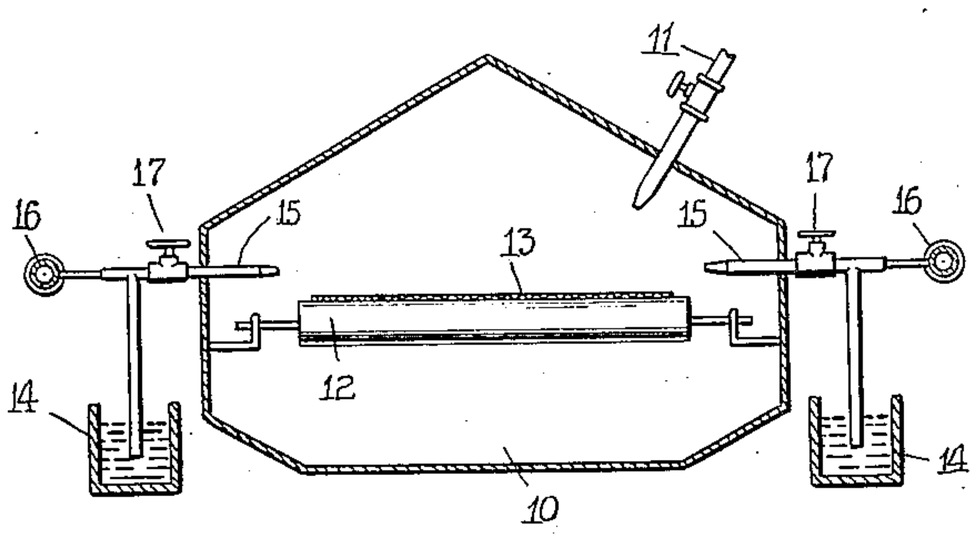


Fig. 2.



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Patented May 9, 1933

1,907,429

UNITED STATES PATENT OFFICE

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METHOD OF AGEING OR STEAMING PRINTED TEXTILE FABRICS

Application filed May 27, 1930. Serial No. 455,997.

My invention relates to an improved method of ageing or steaming printed textile fabrics and embodies certain phases or steps capable of use in the chemical treatment of substances generally.

In present commercial practice, the usual steps in the ageing or steaming of printed fabrics are the following in the sequence stated (1) printing of the fabric (2) drying the printed fabric to a greater or less degree depending on the material being printed and the type of dyestuff used; (3) passing the fabric, either continuously or in batches, through the steamer or ager, this steaming or ageing step constituting a process separate and distinct from the first two steps; (4) drying the aged fabric in a dryer or on a tenter frame.

A greater tinctorial value may be obtained from the dyestuffs used, a step in the process may be eliminated and the entire series of steps may be placed in range or close juxtaposition if the fabric be steamed or aged immediately after the printing step in such manner that the ageing or steaming may be effected as rapidly as the printing can be done by the print machine.

The usual steaming or ageing procedure requires too great an amount of time to permit of its being placed in series with the print machine; the usual steamer or ager of sufficient capacity for that purpose would be high in first cost, complicated mechanically and would contain, at any given time in the course of the process, too much fabric which would be liable to spoilage due to a stoppage of the print machine or of any other part of the mechanism in the range.

The principal object of my invention is to provide a process which obviates the difficulties above referred to, by materially reducing the time required for steaming or ageing the printed fabric, the amount of time reduction depending on the type of dyestuff and fabric used.

In steamers or agers of the character now employed, either superheated or saturated steam is admitted to the chamber containing the fabric, air being admitted with the steam in some cases, and being excluded in others where a reducing action is sought. According to my improved method of ageing or steaming fabrics, I not only admit steam to the ageing chamber but also water in such manner that the water is transformed into a mist which supersaturates the atmosphere and comes into contact with the fabric in the chamber.

The mist wets the fabric rapidly and also rapidly raises its heat conductivity, and therefore the temperature of the fabric may be raised rapidly by the heat content of the steam and water mist to the point at which the reaction between the chemicals, i. e., the dyestuffs on the fabric and the fabric itself takes place. It is quite possible that the increase in heat conductivity of the fabric is due, in large part, to the penetration by the steam and mist of the film of air adhering to the surface of the fabric.

For the purpose of obtaining certain desired results or effects on the fabric, I may introduce chemical reagents in gas or mist form into the chamber coincidently with the water mist and steam if elevated temperatures are sought. As examples of chemicals which may be used, I may mention chlorine for purposes of oxidation or chlorination and SO_2 for reduction, etc. That phase of my method, just described, by which the water mist is used as a vehicle for the introduction of a chemical into a chamber is not limited in its application to the ageing of fabrics but is of general application in the chemical treatment of a variety of substances.

The mist to be introduced into the ageing chamber may be formed by any suitable means and in any well known manner; for example, the water may be atomized and sprayed into the chamber by steam, com-

pressed air or compressed gas spray nozzles, or by mechanical pressure atomizers or centrifugal atomizers. Another manner of forming the mist is to cool in a part or in the entire chamber atmosphere saturated at a higher temperature and continuously fed to the chamber.

The form of mist forming apparatus varies with the results desired. For fabrics easily water spotted the mist must be finer than is necessary for coarser fabrics and in some cases it is desirable to use heated rollers as the support for the fabric so that water will not condense on the rollers.

One form of apparatus which may advantageously be used in the practice of my improved method is illustrated in the accompanying drawing in which Fig. 1 is a top plan view of a portion of the ageing chamber and appurtenant parts and Fig. 2 is an end elevation with parts in section.

Referring to the drawing, 10 denotes the ageing chamber to which steam is admitted through the nozzles 11. Mounted in the chamber is one or a plurality of rolls 12 for supporting the fabric 13 which has come from the print machine (not shown). Extending alongside the chamber 10 at opposite sides thereof are water troughs 14 with which communicates spray nozzles 15 discharging into the chamber 10. These spray nozzles have connection with a compressed air line 16. Each nozzle may have the usual control valve 17. Each air line may also be provided with a usual form of control valve 18.

It will be understood that but a rather simple form of apparatus has been shown and only such parts thereof as are necessary to an understanding of the operation of the method. As the fabric enters the chamber 10 steam is admitted thereto through the nozzles 11 and water mist through the nozzles 15. Should rapidity of ageing action not be desired as where the range is stopped, it is simply necessary to close the valves 17 and stop issuance of mist into the chamber 10.

I claim:

1. In the method of ageing printed fabrics, the steps which comprise introducing the printed fabric into a closed chamber and subjecting it therein to the action of an atmosphere of steam charged with a greater quantity of moisture than the steam will carry at any given prevailing temperature and pressure whereby liquid water in finely divided state will be precipitated from the steam on the fabric immediately upon the entrance of the fabric into the chamber and discontinuing the ageing action before flushing or bleeding of the colors in the fabric occurs.

2. In the method of ageing printed fabrics, the steps which comprise passing the printed fabric through a closed chamber, introducing steam into said chamber to act on the fabric therein, introducing water into the steam atmosphere in quantities greater than the steam will carry at any given prevailing temperature and pressure of the steam whereby liquid water in finely divided state will be precipitated from the steam on the fabric immediately upon the entrance of the fabric into the chamber, and discontinuing the ageing action before flushing or bleeding of the colors in the fabric occurs.

In testimony whereof I affix my signature.

CHARLES H. MASLAND, 2ND.