

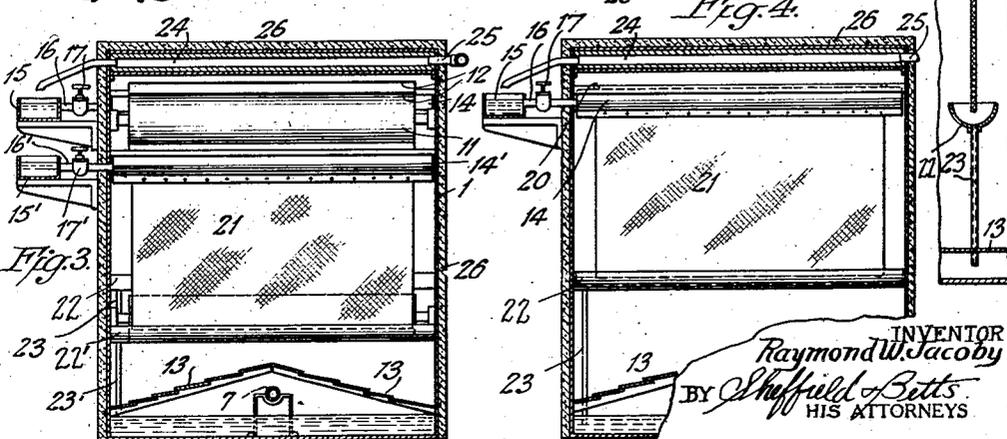
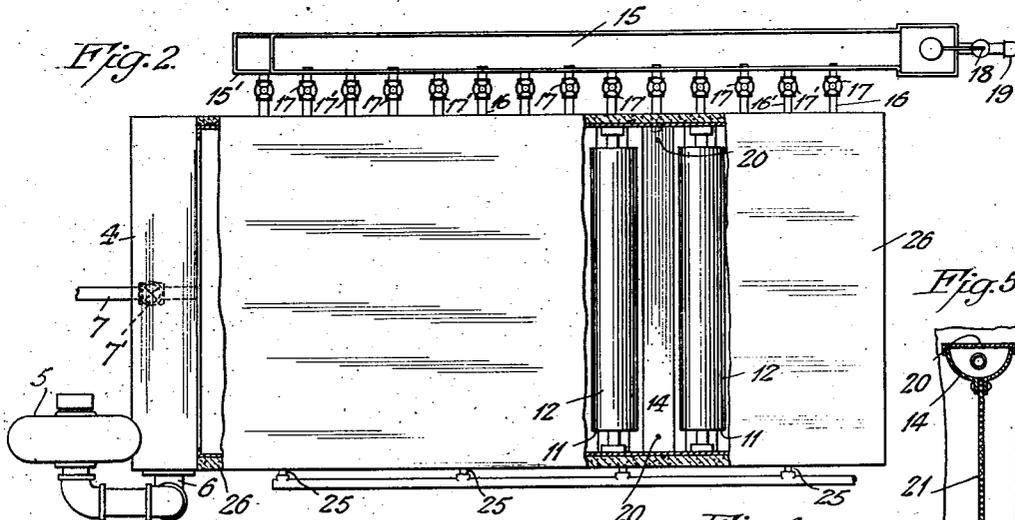
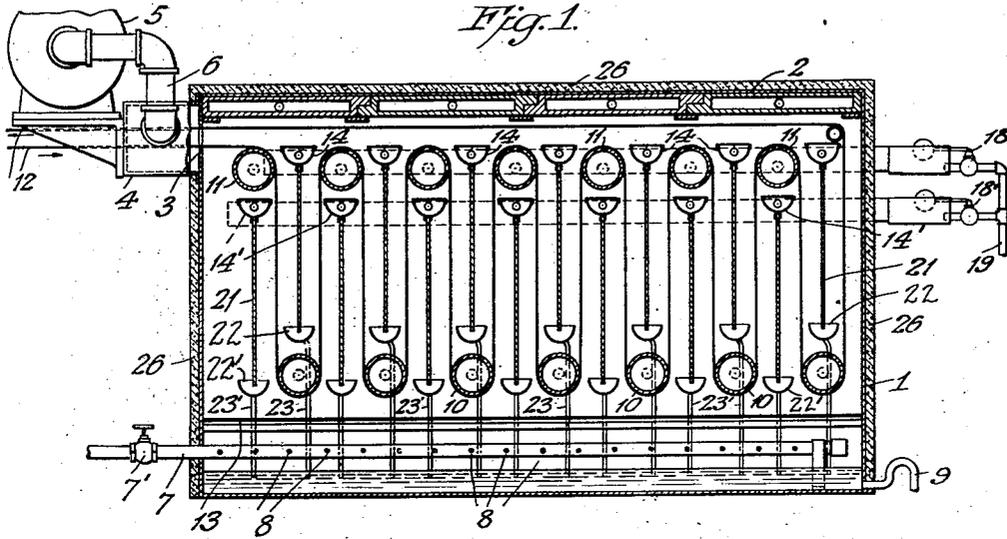
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PROCESS FOR TREATING PRINTED OR DYED FABRICS

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PROCESS FOR TREATING PRINTED OR DYED FABRICS.

Application filed May 3, 1926. Serial No. 106,394.

My invention relates to what is known as vat color printing or dyeing, or to "discharge printing" and particularly to aging or treating vat color prints or dyes or discharge prints or any other product where a reduction is necessary by suitable reagents, such as, with hydrosulphite.

One of the objects of my invention is to produce an improved process applicable to apparatus through which the fabrics being aged may be passed during the reducing action without the usual disadvantages accompanying the methods and apparatus heretofore used for this purpose. As is well-known, it is essential in such treatment of printed or dye goods, that oxygen of the atmosphere should be kept away from the portions of the fabric undergoing chemical reactions. This is usually accomplished by carrying out the reactions in a suitable chamber from which air has been displaced by a suitable gas, usually live steam.

This application relates to the process for treating printed or dyed fabrics, the apparatus therefor being claimed in my co-pending divisional application Serial No. 212,822, filed August 13, 1927.

Heretofore the apparatus involving the usual or standard construction has embodied heating coils and a supply of live steam introduced into the box or ager which, at the point or points of entrance and exit of the fabric, is provided with suction devices such as fan blowers to carry away the steam used during the process. In order to produce the proper reduction I have found it necessary not only to have the proper degree of heat, but also sufficient moisture to prevent the vapor from becoming dry. The chemical reactions which take place in the aging apparatus as above referred to produce a considerable amount of heat which may cause the steam to reach a temperature of 224° F. or even more. This excess heat produces superheated steam which retards the action and also causes non-uniform temperatures in different parts of the box. This causes uneven chemical reaction and results in uneven effects in the goods.

In order to overcome such difficulties it has been proposed to have a slight amount of water retained in the bottom of the box so that the heat may be absorbed and the steam vapors kept at a proper degree of moisture but this has not been effective, as

the water is too far below the points in the apparatus where the heat is generated; furthermore, the water is usually separated from the main portion of the box by a layer of "shingles" to prevent spattering the goods and by a covering of fabric such as burlap. Also the heated vapor tends to remain in the upper part of the box as its temperature is increased so that the heat will not descend and be absorbed by the water at the bottom of the box.

Briefly, my invention comprises a provision or means in the aging box or chamber for evenly distributing moisture and for controlling the temperature throughout the interior thereof so that the fabric passing therethrough will be at all times in contact with the necessary degree of moisture contained in the water vapors so that the proper reduction will take place. Several ways of accomplishing this result are available but the following description constitutes one form of an apparatus which I at present deem preferable for carrying out this invention.

Referring to the drawings, Fig. 1 indicates a vertical longitudinal section of my improved apparatus;

Fig. 2 is a plan view thereof showing the top partly broken away;

Fig. 3 is a cross-sectional view showing details of the means for furnishing moisture to the interior of the box or vat;

Fig. 4 is a detailed view of the means for supplying moisture; and

Fig. 5 is a transverse sectional view thereof.

Referring to the figures of the drawings, the numeral 1 indicates a suitable casing of sheet material which is provided with a top 2, the left hand end of which is provided with an opening 3 through which the cloth may enter and emerge. The opening 3 is provided with means to suck away the steam which would tend to be discharged through said opening, said means preferably being a fan or blower 5 having a pipe 6 leading from the opening 3, the inner end of which connects with a horizontal chamber 4, which is also provided with a slot through which the fabric passes as indicated. A steam pipe 7 having a controlling valve 7' enters the box at a point adjacent the bottom and is provided with series of small openings 8 through which the steam is discharged in the form of

jets. A pipe 9 forms a drain for the condensed steam which may run to the bottom of the box and is provided with a trap as indicated, to maintain the water at a definite level. The interior of the box is provided with two series of rolls 10 and 11 over which the cloth 12, being treated, passes successively in parallel runs as indicated in Fig. 1. Between the steam pipe 7 and the lowermost rolls 10, baffles 13, usually known as "shingles" are inserted in order to give an even distribution of the steam throughout the lower portion of the box and prevent water from spattering on goods. At the upper portion of the box between and below the rolls 11 are placed a series of troughs 14 and 14' which extend across the box from one side to the other and are supplied with water through main supply conduits or troughs 15 and 15', having branches 16 and 16' provided with valves 17 and 17' and which pass through the walls of the box and are adapted to discharge into the troughs 14.

The height of the water in the troughs 15 and 15' is controlled by float valves 18 and 18' connected with the water supply pipe 19. If for any reason these valves should become inactive to shut off the water at the proper point, the water would overflow the edges of the trough 15 and 15' without raising its level in the troughs 14 and 14'. Preferably this water should be approximately 212° F. in order not to produce too great a cooling action in the chamber of the apparatus. The tops of the troughs 14 and 14' are provided with vents 20 which prevent pressure accumulating in the troughs when they are supplied with water. The bottoms of the troughs 14 and 14' are provided with slots through which pass sheets of conductive material 21 so that the water contained within the troughs will be conducted downward through the action of gravity and capillary action thereby keeping said sheets moist, which moisture may evaporate over their entire surfaces and be absorbed by the steam with which the box is filled. This sheet material may be any suitable substance forming liquid conductors such as absorbent material like fabric, felt, metallic screening or gauze to which the liquid will adhere. Other materials adapted to produce the same result will be obvious to those skilled in the art. Adjacent the lower end of the liquid conducting sheets 21 are a second series of transverse troughs 22 and 22' which are supported between the sides of the box and are adapted to receive any water that may drip from the sheets 21 thereby preventing said water from dripping on to the rolls 10 located below the same. The troughs 22 and 22' are preferably provided with outlet pipes 23 and 23' adjacent one end so that the water may be discharged through the shingles 13 into the

bottom of the box without splashing onto the fabric or rolls.

The top of the box is preferably provided with hollow heating plates 24, supplied with steam, through pipes 25, as is usual, to maintain the proper temperature in the upper portion of the box. The box is also preferably covered on the sides and top with heat insulating material such as asbestos, indicated at 26.

From the above description it will be evident that as the cloth 12 proceeds through the aging box alternately over the rolls 10 and 11, it will be subjected to the vapor issuing from the surfaces of the conductive sheets 21. Thus the temperature within the box will always be maintained at a point to produce the necessary reactions and no injurious superheated steam will be formed. The degree of moisture within the aging box may be regulated by controlling the entrance of the steam through the valve 7', and also by controlling the inlet of the water through the valves 17 and 17'. Obviously the suction blower 5 should not be run at a greater speed than is sufficient to withdraw the excess steam and should not reduce the pressure within the box substantially below atmospheric pressure unless it should be desired to produce the reaction under a pressure less than that of atmospheric pressure.

Having thus described this form of my invention, what I claim and desire to protect by Letters Patent is:

1. In the process of aging or reducing printed or dyed fabric, the step which comprises causing the excess heat of chemical reactions to be absorbed by supplying moisture in the immediate vicinity of the points where said reactions take place, so that its evaporation will absorb the excess heat thereof and maintain the heat carrying medium as a saturated vapor.

2. In the process of aging or reducing printed or dyed fabric, the step which comprises causing the excess heat of chemical reactions to be absorbed by supplying water in the immediate vicinity of the points where said reactions take place, so that its evaporation will absorb the excess heat thereof and maintain the heat carrying medium as saturated steam.

3. The process of aging or reducing printed or dyed fabric to eliminate the excess heat generated by chemical action, which comprises supplying heat to produce the desired reactions and simultaneously maintaining said fabric at all points in an atmosphere of hydrous vapor by supplying moisture to prevent superheating thereof.

4. The process of aging or reducing printed or dyed fabric to eliminate the heat generated by chemical action, which comprises supplying heat to produce the desired reactions and simultaneously maintaining said

fabric at all points in an atmosphere of saturated steam by supplying water vapor to prevent superheating thereof.

5 5. The process of aging or reducing printed or dyed fabric to eliminate the excess heat generated by chemical action which comprises, supplying heat to produce the de-

sired reactions, and simultaneously maintaining said fabric at all points in saturated water vapor at the required degree of saturation by regulating the supply of said heat and said water vapor. 10

Signed this 1st day of May 1926.

RAYMOND W. JACOBY.