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J. M. J. BAUDOT.

APPLICATION OF ELECTROLYSIS TO SCOURING AND SQUEEZING MACHINES.

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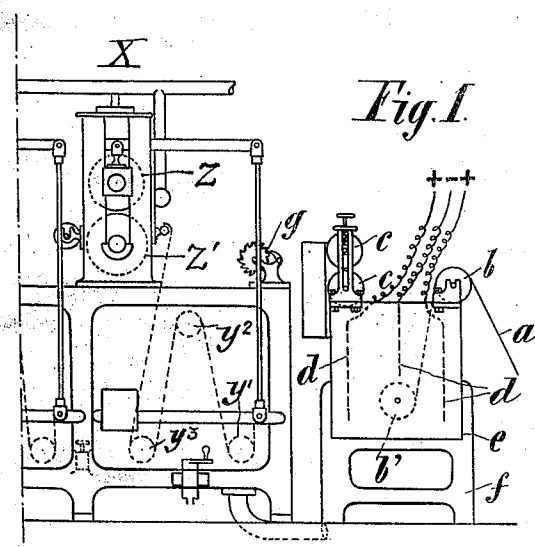


Fig. 1.

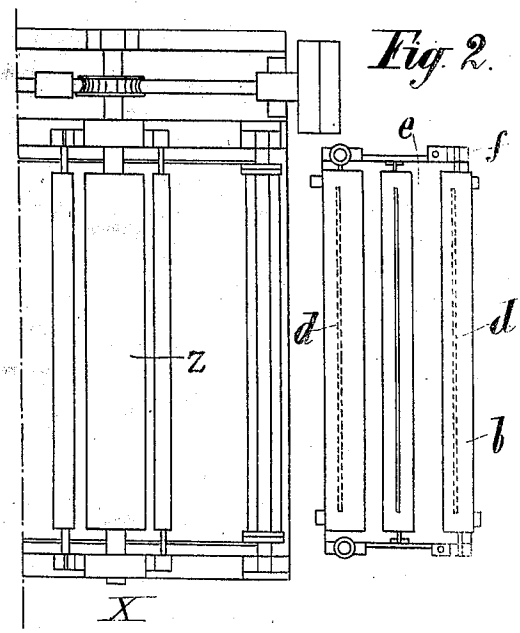


Fig. 2.

Witnesses:

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APPLICATION OF ELECTROLYSIS TO SCOURING AND SQUEEZING MACHINES.

No. 895,144.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JEAN MARIE JOSEPH BAUDOT, a citizen of the French Republic, residing at Roubaix, in the Department of Nord, France, have invented a new Application of Electrolysis to Scouring and Squeezing Machines, of which the following is a specification.

In cloth finishing, the scouring and washing processes after fulling and bleaching, require quite a long time, much careful handling and a large supply of water. Moreover, through lack of practical means for recovering them, the oil and fatty acids or soap which is formed or added, pass away with the waste wash-liquor, giving rise to serious losses. Moreover, there are often found in the cloth and particularly after treatment in "rope" form, traces of fatty acids or soaps which produce, when the cloth is being dyed, faults in the nature of spots, stains or shades, which are very prejudicial. Also the fact that the cloth is kept for a prolonged time under a rolling action when in the bath, entails considerable wear, followed by a very noticeable loss in weight.

The present invention relates particularly to the treatment of the cloth after the scouring, fulling and bleaching processes, the important principle involved consisting in the treatment of the cloth by an electric current, which is used for penetrating, reducing and extracting the soapy film formed as above-mentioned. In addition to this, I aim to recover the fatty magma having a semi-solid consistency, and resulting from the soapy matters extracted from the cloth.

With these objects in view, my invention consists in the features of construction and combination as hereinafter set forth and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a cross sectional view of a part of the squeezing machine together with the electrolytic vat situated at the inlet end of the plant. Fig. 2 is a plan view of the same.

Referring to the drawings in which like parts are designated by the same reference sign, *a* is the cloth to be squeezed, and *b b'* are movable rollers of wood or other suitable material which guide the cloth in its passage through the electrolytic vat *e* having plates or electrodes *d*. *c c'* are the squeezing rollers acting on the cloth after the same has passed through the vat. The vat may be supported in any suitable way, for example, by the

frame or standard *f*. After the cloth has passed through the vat, it enters the tension device *g* of the squeezing machine *X* which imparts certain resistance to the cloth in its passage in a manner sufficiently well-known, and which need not be described.

By the present method of treatment, a piece of cloth is taken after treatment in the fulling or scouring machine and before being washed, that is to say, containing all the soap with which it has previously been impregnated, and its end is carried around the movable rollers *b b'* of the elevated vat *e*, placed in front of the squeezing machine. After having made the circuit, the cloth is received by the squeezing machine *X*, and passes through the first compartment thereof by ascending and descending over the inside rollers *Y' Y² Y³* till it reaches and engages with the first two squeezing rollers *Z Z'* covered with india rubber.

The pieces of cloth are successively passed through the apparatus being fastened end to end in a continuous series so as to act like a continuous web, and secure a continuous operation of the squeezing machine.

Before starting the machine care must be taken that the electrolytic vat be provided with the required quantity of water containing carbonate of soda or potash to insure the proper action of the electrolytic plates. The quantity of liquid is kept practically constant by replenishing it as it is consumed. The effects produced: When the cloth passes through the electrolytic vat, and the current is permitted to traverse the electrolyte, the latter is partially decomposed and weak alkaline products are liberated throughout the same, and particularly in the body of the fabric in which the current is greater by virtue of the greater resistance. Inasmuch as the current is bound to traverse every particle of the cloth, it is insured that all the fibers are acted upon. By this action there is produced, 1. A weak caustification of the alkalies, and the forming upon the cloth of a more complete soap, there being previously only a coarse soapy film. 2. By the attraction of the freed salts with the elimination of gelatinous matters, waste fibers, dust and other small impurities which are kept in the yarn or material of the cloth and which are carried away with the salts thus formed, the action of scouring is quite completed, and when the pieces of cloth engage between the first pair of squeezing rollers, their compress-

ing action absolutely removes and throws back into the first compartment the soapy matter already substantially solidified and gathered in a film on the surface of the cloth.

5 When the first compartment of the squeezing machine becomes sufficiently filled with the soapy sludge to have its cylinders and also the cloth partly bathed in it, the surplus of the said soapy sludge is led into the electrolytic recovery vat conveniently situated for this purpose. The pieces of cloth thus successively pass from the first compartment in the squeezing machine, and then are submitted to a second scouring which absolutely insures the completion of the action. There is no danger of incomplete scouring which has been the cause of many difficulties and annoyances in dyeing, chiefly when dealing with cloth which has been heavily oiled. Moreover, the method enables shortening to a considerable extent, the time ordinarily spent over the scouring and washing processes, after the fulling and bleaching processes. As a result of the facility with which the soapy matters are precipitated in the first compartment, the second compartment gets so little of such matters, that the scouring of the cloth is effected well enough to allow the third compartment to be filled with a large supply of running water for washing, which is in most cases quite sufficient for the last rinsing of the cloth before being dyed.

35 The electro-chemical phenomena whose influences have already come into play at the beginning of the operation, again come into action for recovering the fatty substances which compose the largest portion of the soapy wash-liquor led by the overflow from the first compartment of the squeezing machine to the electrolytic vat connected to the dynamo. These alkaline products acting as electrolytes are decomposed in the said vat, as a consequence of the decomposition of the alkaline salts. The alkaline salts are precipitated, the fatty acids depositing upon the surface of the metallic plates constituting the electrolytic system of the vat or rise to the

surface of the liquor where they are easily removed. They may be afterward treated for removing the excess of water which they contain. Such fatty acids still contain impurities, which are removed by submitting them to the action of a press heated by steam after which they come out clarified and pure enough to be either used again for making soap or sold to the trade. The treated magma gives out from 50 to 55% in weight of fatty acids.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. The process of washing fabrics which consists in guiding the fabric through a trough containing an electrolyte capable of liberating an alkaline product when traversed by a current, passing a current through said electrolyte and through the fabric, whereby said alkaline product is liberated within the fabric, then directing the fabric through squeezing or wringing rolls to expel the sludge and products therefrom, passing the fabric through a second trough containing an electrolyte of the character above described, sending a current through said second electrolyte, again passing the fabric through squeezing or wringing rollers, and finally cleansing the fabric in running water.

2. The process of washing fabrics free of soap and similar products which consists in guiding the fabric through a trough containing a solution of an alkaline carbonate and a pair of electrodes, the cloth traversing a path between said electrodes whereby the current traverses the cloth, and finally squeezing the fabric to expel the electrolytic products therefrom.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JEAN MARIE JOSEPH BAUDOT

Witnesses:

NOURSE,
PAUL SERRE.