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MACHINE FOR DYEING TEXTILE MATERIALS IN BUNDLES

Filed June 19, 1931

Fig. 1

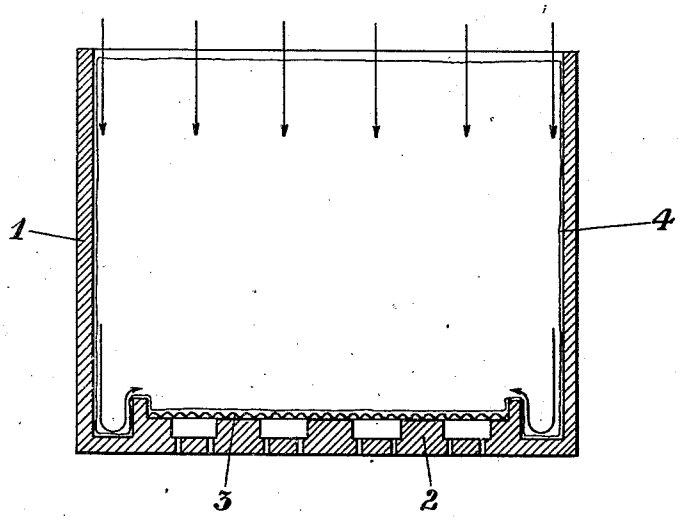
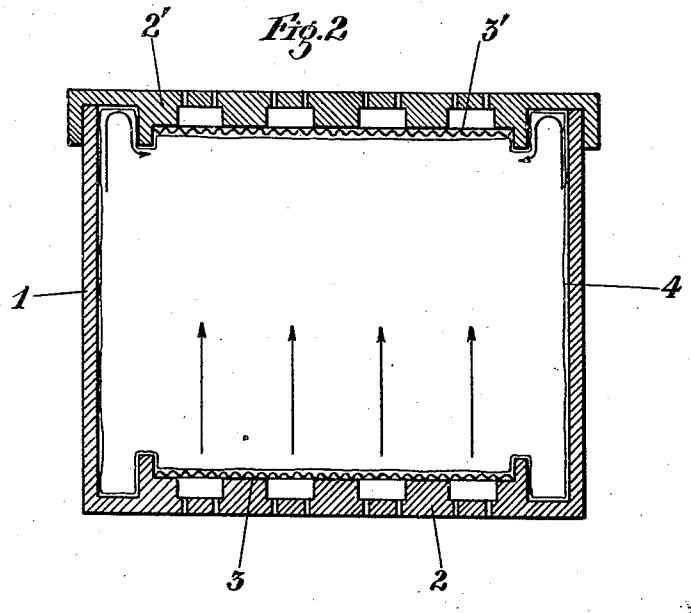


Fig. 2



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MACHINE FOR DYEING TEXTILE MATERIALS IN BUNDLES

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In dyeing textile materials in bundles, particularly cotton, the material is held between the bottom and cover of the vat and the dyeing bath is forced under pressure through the material. To this end the bottom and cover of the vat are provided with holes for the passage of the dye. Practically it is not easy to obtain a regular dyeing. At the center of the mass the circulation of the dye is in fact less active, less rapid than at the periphery thereof, because the resistance to the passage of liquid is less at the periphery. Moreover at the lower and upper rims of the mass, there will frequently be formed white dots (not dyed or insufficiently dyed) due to the lower resistance at these places and the presence of air bubbles.

My present invention has for its object to secure a perfect regularity of dyeing throughout the whole mass and avoid the formation of white dots. My invention consists in creating artificially an auxiliary resistance at the periphery of the bottom—and in some cases of the cover—so as to regulate the circulation of dye throughout the whole mass.

In order to enable the invention to be clearly understood, I have illustrated one preferred embodiment of my improved machine in the accompanying drawing, wherein:

Fig. 1 is a vertical axial section of a dyeing vat according to my invention.

Fig. 2 is a similar section of a dyeing vat illustrating a cover.

Referring to Fig. 1, 1 designates the vat of any desired cross section, having a bottom 2 provided with perforations for the passage of the dye under pressure. Said bottom is covered with wire gauze 3, upon which the mass 4 of textile material (for instance cotton in flocks or bundles) to be treated is piled. The textile material is pressed on the wire gauze 3 by means of a tightly closing cover (not shown). Assuming the dye circulating from bottom to top, it will be seen that the circulation will normally be more rapid towards the periphery than at the center, owing to the lower resistance towards the periphery. The dye will rapidly escape along the walls of the vat and through the perforations in the bottom near the rim thereof.

According to my invention I provide, at the periphery of the bottom a special resistance preventing the liquid from flowing off freely and rapidly along the walls of the vat. The bottom has an upwardly projecting rib 7 at a certain distance apart from its periphery, said rib confining a peripheral trough 8. Said rib 7 has preferably an auxiliary projecting rim 9. The perforations in the bottom are provided merely in the portion surrounded by the rib 7. The wire gauze is placed upon the lowermost portion of the rib and moreover preferably supported on ribs 10 of the bottom, the perforations 11 being provided between the ribs 10 in this case. The mass to be treated is compressed and enters the trough 8, wherein it will form a resistant joint to the passage of dye. The liquid which tends to escape along the walls of the vat, will meet at this joint with a resistance still increased by the presence of the projection 9. Therefore in order to escape the liquid will be obliged to overcome its own pressure.

Practical experiments have proved that in this way the dye will regularly enter and circulate through the whole mass to be treated.

As the dye is generally obliged to circulate alternately towards the bottom and towards the top, the cover of the vat will be constructed similarly to the bottom thereof with projecting ribs, as is illustrated in Fig. 2 wherein the cover is designated by 6, provided with the rib 7′, the rim 9′, the wire gauze 3′ and the exhaust ports 11′ for the dye-liquid.

I wish it to be understood that the shape and height of the rib or ribs may be varied according to the applications and the invention is not limited to the dyeing vats only, as it may be used advantageously with any vat, in which textile materials in flocks or bundles are to be uniformly treated by a circulating bath.

Having now fully described my said invention, what I claim and desire to secure by Letters Patent, is:

1. In a vat for dyeing or otherwise treating

textile materials with a liquid bath forced under pressure through the materials, the combination with the wall through which the bath escapes after having passed through the mass of materials to be treated, of a projecting rib parallel to the rims of said wall and slightly apart therefrom, an offset trough formed by said rib along the rims of the wall for the reception of the compressed materials and formation of a tight joint preventing the bath from flowing freely along the walls of the vat, and exhaust ports for the bath provided in the portion surrounded by said projecting rib.

2. In a vat for dyeing or otherwise treating textile materials with a liquid bath forced under pressure through the materials, the combination with the upper and lower walls of the vat through which the bath escapes after having been passed through the materials to be treated, of projecting ribs on said walls parallel to the rims of the latter and slightly apart from said rims, offset troughs formed by said rims along the rims of said walls for the reception of the compressed materials and formation of tight joints preventing the bath from flowing freely along the vertical walls of the vat, and exhaust ports for the bath in the central portions of the upper and lower walls surrounded by said projecting ribs.

3. In a vat for dyeing or otherwise treating textile materials with a liquid bath circulating under pressure through the materials, the combination with the bottom wall of the vat through which the bath escapes after having circulated through the materials to be treated, of a projecting rib on said bottom wall parallel to the rim thereof and slightly apart from said rim, an offset trough formed by said rib along the rim of the bottom wall for the reception of the compressed material and formation of a tight joint preventing the bath from flowing freely along the vertical walls of the vat, exhaust ports for the bath in the central portion of the bottom wall surrounded by said projecting rib, and a peripheral projection on said projecting rib arranged to surround the usual wire gauze placed upon the bottom wall for supporting the materials under treatment.

4. In a vat for dyeing or otherwise treating textile materials with a liquid bath circulating under pressure through the materials, the combination with the bottom wall of the vat through which the bath escapes after having circulated through the materials to be treated, of a projecting rib on said bottom wall parallel to the rims thereof and slightly apart from said rim, an offset trough formed by said rib along the rim of the bottom wall for the reception of the compressed material and formation of a tight joint preventing the bath from flowing freely along the vertical walls of the vat, further projecting ribs on the central portion of the bottom wall, a wire gauze placed upon said central ribs and the outer projecting rib, a projecting rim on the first named projecting rib arranged around said wire gauze, and perforations in the bottom wall provided in the portions comprised between said central ribs.

5. In a vat for dyeing or otherwise treating textile materials with a liquid bath circulating under pressure through the materials, the combination with the bottom and top walls of the vat through which the bath escapes after having circulated through the materials to be treated, of projecting ribs on said bottom and top walls parallel to the rims thereof and slightly apart from said rims, offset troughs formed by said projecting ribs along the rims of the bottom and top walls for the reception of the compressed material and formation of tight joints preventing the bath from flowing freely along the vertical walls of the vat, further projecting ribs on the central portions of the bottom and top walls of the vat, wire gauzes placed upon said central ribs and said outer projecting ribs, projecting rim portions on the latter arranged around said wire gauzes, and perforations for the passage of the bath in the bottom and top walls provided in the portions thereof comprised between the central ribs thereon.

JOSEPH ANNICQ.