

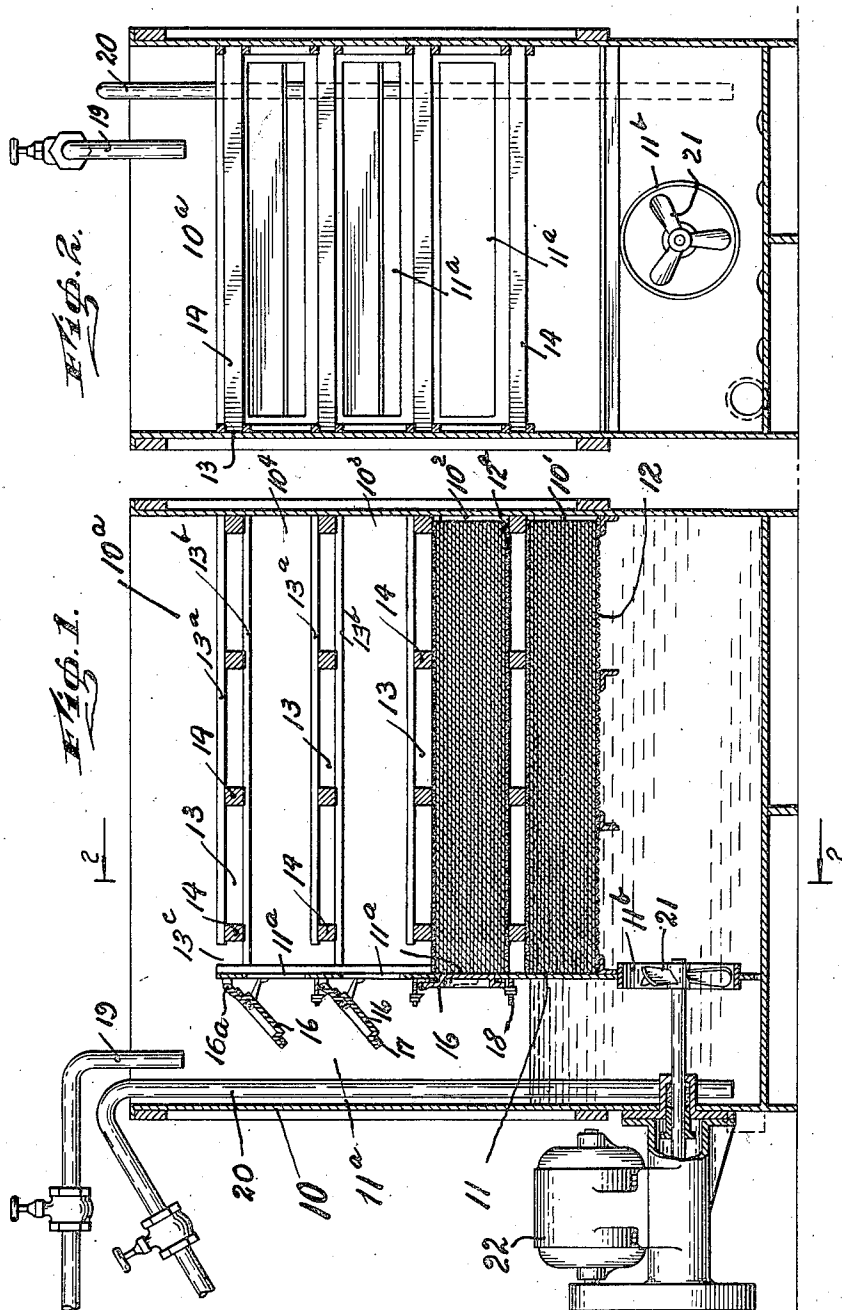
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APPARATUS FOR DYEING WOOL

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APPARATUS FOR DYEING WOOL

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4 Claims. (Cl. 68—187)

This invention relates to an apparatus for dyeing wool in its different forms, such as raw material, yarn, spools, skeins, tops or the like.

The object of this invention is to provide an apparatus whereby such material can be dyed so that it will remain soft throughout, and will not tend to felt on its surface, and whereby a uniform treatment of the material by the dye liquor will be obtained.

Another object of this invention is to provide a construction whereby the quantity of dye liquor can be easily regulated to be in proper proportion to the volume of the material to be dyed, so that a considerable saving of the relatively expensive dye chemicals, heat and water will be obtained.

Another object is to provide an apparatus of extremely simple construction and of such simple operation that a number of such machines or apparatus can be controlled and attended to by a single person.

With these and other objects in view my invention consists of the novel construction, combination and arrangement of parts as will be hereinafter more fully described and defined in the appended claims.

In the accompanying drawing which constitutes part of this specification and in which similar reference characters denote corresponding parts,

Figure 1 is a vertical section of my apparatus, and

Figure 2 is a cross section on line 2—2 of Figure 1.

The apparatus comprises an open topped tank 10 of rectangular shape which by a vertical partition 11 is separated into two chambers, chamber 10a serving to receive the material to be treated and chamber 11a serving to receive the dye liquor and also heating means. The partition 11 rising from the bottom terminates somewhat below the upper edge of the tank.

At a suitable elevation from the bottom of the tank within the chamber 10a a compartment 10' is formed, which is provided with a horizontally extending perforated surface such as a netting or mesh 12 to support a certain volume of the material to be treated in said compartment. The space above said support is provided with means whereby it can be quickly and conveniently separated into a number of vertically superposed additional compartments 10², 10³, and 10⁴, each to receive additional volumes of the material to be treated. To this end each of two opposite walls of the chamber 10a may be provided with a plurality of parallel vertically spaced horizontal

grooves 13, the corresponding grooves in the two walls being in alignment with one another and capable of slideably and removably engaging a plurality of beams or bars 14 to be spaced from one another. These beams or bars are adapted not only to separate the divers compartments from one another, but also to compress the material deposited in the compartment below them and to hold the material in compressed and stationary condition during the dyeing process.

For the support of the material in each of these compartments perforated sheets or nettings 12a are removably mounted on said spaced bars.

In the example shown the grooves 13 are advantageously formed each by a pair of ribs 13a—13b of which rib 13a is somewhat shorter to form a gap 13c through which the bars can be easily slid into position within the grooves.

Thus in addition to the volume of material deposited on the perforated surface 12 additional volumes of such material may be packed in one or more of the compartments, 10', 10², or 10³.

The partition 11 is provided with a number of openings 11a arranged in alignment with the divers compartments and capable of being closed by doors 16. These doors are suitably hinged at 16a to said partition 11 or otherwise movably supported thereon and may be provided with gaskets 17 to produce tight closure. Clamping screws 18 are provided to hold the doors in closed position. A pipe 19 for the admission of water into the chamber 11a terminates at the upper end of said tank. Leading into and downwardly through the chamber 11a is a steam pipe 20 for heating the dye liquor.

The lower portion of the partition 11 is provided centrally with a circular opening 11b in which is mounted an impeller 21 or the like which may be suitably propelled from a motor 22 and which serves to circulate the dye liquor through the material to be dyed.

In the drawing two compartments in the chamber 10a are shown to be packed with the material to be dyed. In that case the openings 11a of the empty compartments are open while the door of the packed compartment is closed. If the next higher compartment is also to be packed its opening too will be closed.

The material is deposited on the perforated surfaces 12, 12a then covered by another perforated surface 12b and compressed by the beams or bars 14.

In operation water in proportion to the volumes of material to be treated is admitted into the chamber 11a, and a proportionate amount of

the dye stuff is dropped into the water. After admitting steam through the pipe 20 the impeller 21 is set into motion through the motor 22 as a result of which the dye liquor will be caused to circulate from the chamber 11a through the material packed in the chamber 10a.

Since various changes may be made in the construction of my apparatus without departing from the underlying principle thereof, I do not wish to restrict myself to the details described and shown except as limited by the scope of the claims.

What I claim is:

1. An apparatus of the character described comprising a tank divided laterally into two separate chambers, one serving to receive the material to be treated and the other to receive the dye liquor, opposite walls of said tank having each a vertical set of horizontal grooves, a perforated support in said first named chamber mounted at an elevation from the bottom thereof, said two chambers having controllable passages above said perforated support, means for compressing the material and holding it in compressed and stationary condition during the dyeing process, said means including members removably and slidably borne in said grooves, to divide said material receiving chamber into separate compartments, said passages being in alignment with said separate compartments, means for continuously and uniformly heating the dye liquor and means for causing the circulation of the dye liquor through the material to be dyed.

2. In an apparatus of the character described, a tank formed laterally with a dye liquor receiving chamber, a perforated support for the material to be treated in said tank mounted at an elevation from the bottom thereof, means for separating the space above said perforated support into several vertically superposed compartments each adapted to receive an additional volume of the material to be treated, said means including a plurality of members capable of removably engaging opposite walls of said tank, perforated supports adjusted to be removably

mounted on said members, the latter serving also to compress the material deposited in a compartment below and hold said material in compressed and stationary condition during the dyeing process, heating means in said chamber and means for causing the circulation of the dye liquor through the material to be treated, said tank having controllable openings leading into said dye liquor receiving chamber and arranged in alignment with said superposed compartments.

3. In an apparatus of the character described, a tank divided by a vertical partition having controllable passages into two separate chambers, one serving to receive the material to be dyed and the other to receive the dye liquor, a perforated support for the material in said first named chamber above the bottom thereof, vertical sets of supports on said partition and the opposite wall of said first named chamber, members removably and slidably engaging said supports and serving to subdivide said first named chamber into a plurality of compartments for additional volumes of material to be dyed, said controllable passages leading from said compartments into said dye liquor receiving chamber and being in alignment with said compartments, and means between said last named chamber and the space below said perforated support, for impelling the dye liquor to circulate through the material to be dyed.

4. In an apparatus of the character described, a tank formed with a dye liquor receiving chamber, a perforated support for the material to be treated in said tank, removable means for separating the space above said perforated support into a plurality of vertically superposed compartments each adapted to receive an additional volume of material to be treated, heating means in said chamber, means for causing circulation of the dyeing liquor through the material to be treated, said tank having controllable passages leading into said liquor receiving chamber and arranged in alignment with said superposed compartments.

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