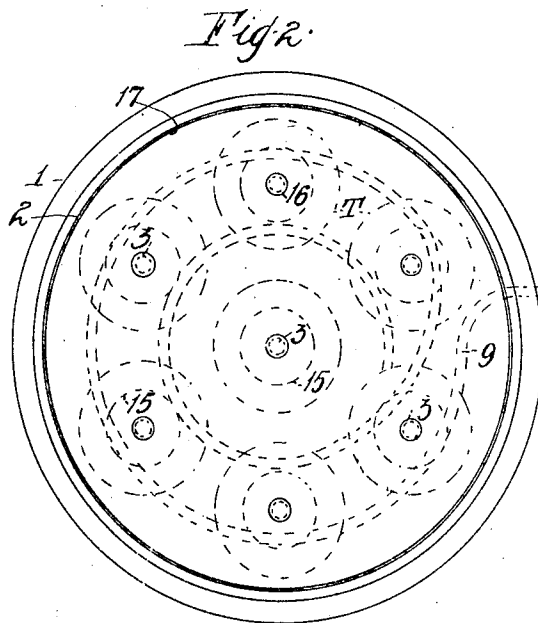
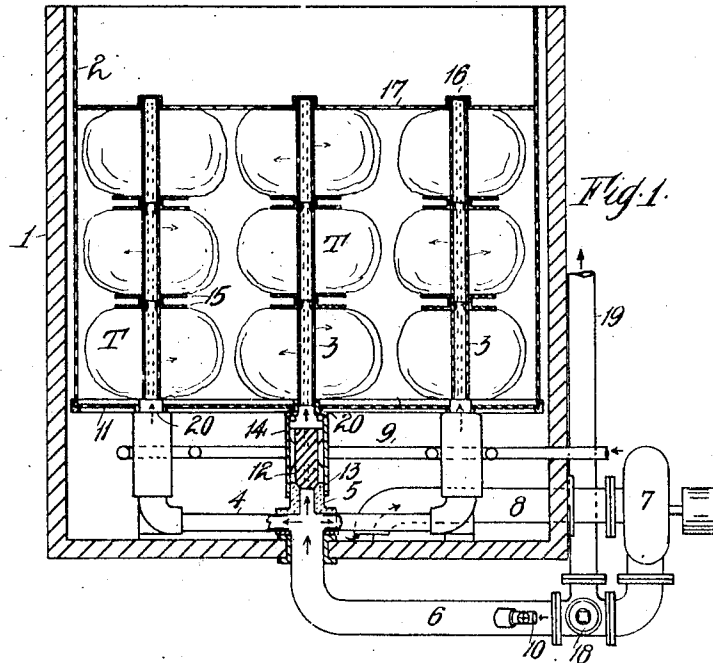


A. MURRAY.
 APPARATUS FOR DYEING WOOL AND THE LIKE.
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1,060,277.

Patented Apr. 29, 1913.



Witnesses:
 B. Pommers.
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 By *Wm. J. McArthur* Atty.

UNITED STATES PATENT OFFICE.

ANDREW MURRAY, OF GEELONG WEST, VICTORIA, AUSTRALIA.

APPARATUS FOR DYEING WOOL AND THE LIKE.

1,060,277.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Application filed June 19, 1912. Serial No. 704,576.

To all whom it may concern:

Be it known that I, ANDREW MURRAY, a subject of the King of Great Britain, residing at Geelong West, in the State of Victoria, Australia, have invented an Improved Apparatus for Dyeing Wool and the Like, of which the following is a specification.

This invention consists of an improved apparatus for dyeing wool and particularly tops of wool as well as cotton or other material in such a manner that approximately boiling dye liquor is circulated through the material contained in a vat so that a uniform standard of dyeing is insured. By means of this apparatus it is unnecessary to stir the material so that it will not be broken, matted, roped or otherwise damaged and moreover it lessens the labor usually required in known apparatus for dyeing wool and like material.

The accompanying drawings illustrate one suitable form of the apparatus and comprise:—

Figure 1 a vertical section of one embodiment of the invention particularly adapted for dyeing tops, and Fig. 2 a plan of the casing.

Referring to these drawings 1 designates a wooden or other casing or vat adapted to contain the dye liquor and 2 a cage having perforated sides and bottom as shown and adapted to contain the wool or other material. The bottom 11 of the cage is preferably removably supported above the bottom of said vat as for instance upon the shoulders 20 of the valve casings 14 referred to hereinafter and for this purpose the bottom is formed with openings which pass over the tops of the casings.

Through the bottom of the cage vertical perforated pipes 3 or other similar distributing devices project and are adapted to be readily connected or fitted to branches 4 leading from a central distributor 5 connected to the delivery pipe 6 of a pump 7, the suction pipe 8 of which leads from the bottom of the vat.

Above the bottom of the vat beneath the cage a steam coil 9 is provided for primarily boiling the dyeing liquor and for subsequently keeping up the temperature. A steam jet 10 is moreover provided in the delivery pipe 6 or elsewhere in the feed pipes and is brought into operation when the dyeing liquor has reached boiling point in order

to maintain the desired approximately boiling temperature of the liquor which otherwise naturally loses some degrees of heat during circulation.

The material, such as tops, is wound around the perforated pipes 3 in the cage and the heated liquor is drawn through the suction pipe 8 and delivered through the delivery pipe 6 and distributed through said perforated pipes and through the material around same after which the liquor percolates through the sides of cage and perforated bottom 11 of the cage and is again drawn away by the suction pipe of the pump. By this circulating process the material is continuously and thoroughly impregnated with the dye liquor with the result that good quality is obtained without any damage to the material.

The branches 4 are each provided with regulating delivery valves 12 seated upon valve seats 13 in casings 14, the function of which valves is to control the supply of liquor delivered into the different perforated pipes 3 so as to insure an equal distribution of liquor through each of same.

In treating tops for which the apparatus is particularly designed the perforated pipes are formed of readily jointed pieces upon each of which is wound a ball of tops T, which are separated by perforated distance disks 15 slipped over said pieces. These disks are placed at proper intervals so that each ball will be operated upon separately thereby insuring a uniform standard of dyeing. The cage 2 is closed near the top by a plate 17, which is provided with apertures through which the upper ends of the pipes 3 project said plate resting on the top balls T of material. The upper ends of the pipes 3 are closed by caps 16 which may engage the plate 17 and hold the latter in place.

The delivery pipe of the pump is provided with a three way cock 18 which is connected with a discharge pipe 19 by which means the vat may be emptied.

I claim:

1. A dyeing apparatus comprising a vat, a cage mounted therein forming a space between the vat and cage and a chamber below the latter, a heating device mounted in the chamber, a pump, a suction pipe connecting the latter with the chamber, distributing pipes mounted in the latter and

connected with the pump, and perforated pipes extending vertically through the cage adapted to hold the material to be dyed.

2. A dyeing apparatus comprising a vat, a cage mounted therein forming an annular space between the vat and cage and a chamber between the bottoms of the cage and vat, a heating device mounted in the chamber, a suction pipe leading from the chamber, distributing pipes mounted in the latter, perforated supporting pipes connected with the distributing pipes and extending vertically through the cage, and a pump connected with the suction pipe adapted to suck heated fluid from the chamber and force said fluid through the distributing pipes and out of the perforated pipes and back to the chamber.

3. A dyeing apparatus comprising a vat, a cage mounted therein forming an annular space between the vat and cage and a chamber between the bottoms of the cage and vat, a heating device mounted in the chamber, a suction pipe leading from the chamber, distributing pipes mounted in the latter, perforated supporting pipes connected with the distributing pipes and extending vertically through the cage, caps closing the upper ends of the perforated pipes, and a pump connected with the suction pipe adapted to suck heated fluid from the chamber and force said fluid through the distributing pipes and out of the perforated pipes and back to the chamber.

4. A dyeing apparatus comprising a vat, a receptacle removably mounted therein having a perforated bottom and sides, said receptacle and vat forming an annular space between their sides and a chamber between their bottoms, an imperforate top for the receptacle, a steam coil mounted in the chamber, a suction pipe leading from the chamber, distributing pipes mounted in the chamber, perforated pipes detachably connected to the distributing pipes extending vertically through the receptacle, a pump connected with the suction pipe, and a delivery pipe connecting the pump with the distributing pipes whereby heated liquid may be withdrawn from the chamber and forced through the receptacle back to the chamber.

5. A dyeing apparatus comprising a vat, a receptacle removably mounted therein having a perforated bottom and sides, said receptacle and vat forming an annular space between their sides and a chamber between their bottoms, an imperforate top for the receptacle, a steam coil mounted in the chamber, a suction pipe below the steam coil leading from the chamber, radially projecting distributing pipes mounted in the cham-

ber, perforated pipes detachably connected to the distributing pipes extending vertically through the receptacle, caps closing the tops of the perforated pipes, a pump connected with the suction pipe, and a delivery pipe connecting the pump with the distributing pipes whereby heated liquid may be withdrawn from the chamber and forced through the receptacle back to the chamber.

6. A dyeing apparatus comprising a vat, a receptacle removably mounted therein having a perforated bottom and sides, said receptacle and vat forming an annular space between their sides and a chamber between their bottoms, an imperforate top for the receptacle, a steam coil mounted in the chamber, a suction pipe below the steam coil leading from the chamber, radially projecting distributing pipes mounted in the chamber, perforated pipes detachably connected to the distributing pipes extending vertically through the receptacle, caps closing the tops of the perforated pipes, a pump connected with the suction pipe, a delivery pipe connecting the pump with the distributing pipes whereby heated liquid may be withdrawn from the chamber and forced through the receptacle back to the chamber, and a steam jet in the delivery pipe.

7. A dyeing apparatus comprising a vat, a receptacle removably mounted therein having a perforated bottom and sides, said receptacle and vat forming an annular space between their sides and a chamber between their bottoms, an imperforate top for the receptacle, a steam coil mounted in the chamber, a suction pipe below the steam coil leading from the chamber, radially projecting distributing pipes mounted in the chamber, perforated pipes detachably connected to the distributing pipes extending vertically through the receptacle, caps closing the tops of the perforated pipes, a pump connected with the suction pipe, a delivery pipe connecting the pump with the distributing pipes whereby heated liquid may be withdrawn from the chamber and forced through the receptacle back to the chamber, a steam jet in the delivery pipe, a discharge pipe in the latter, and a three-way cock in said delivery pipe adapted to direct the flow of liquid alternately through the discharge and delivery pipe.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ANDREW MURRAY.

Witnesses:-

EDWARD H. WATERS,
WILLIAM H. WATERS.