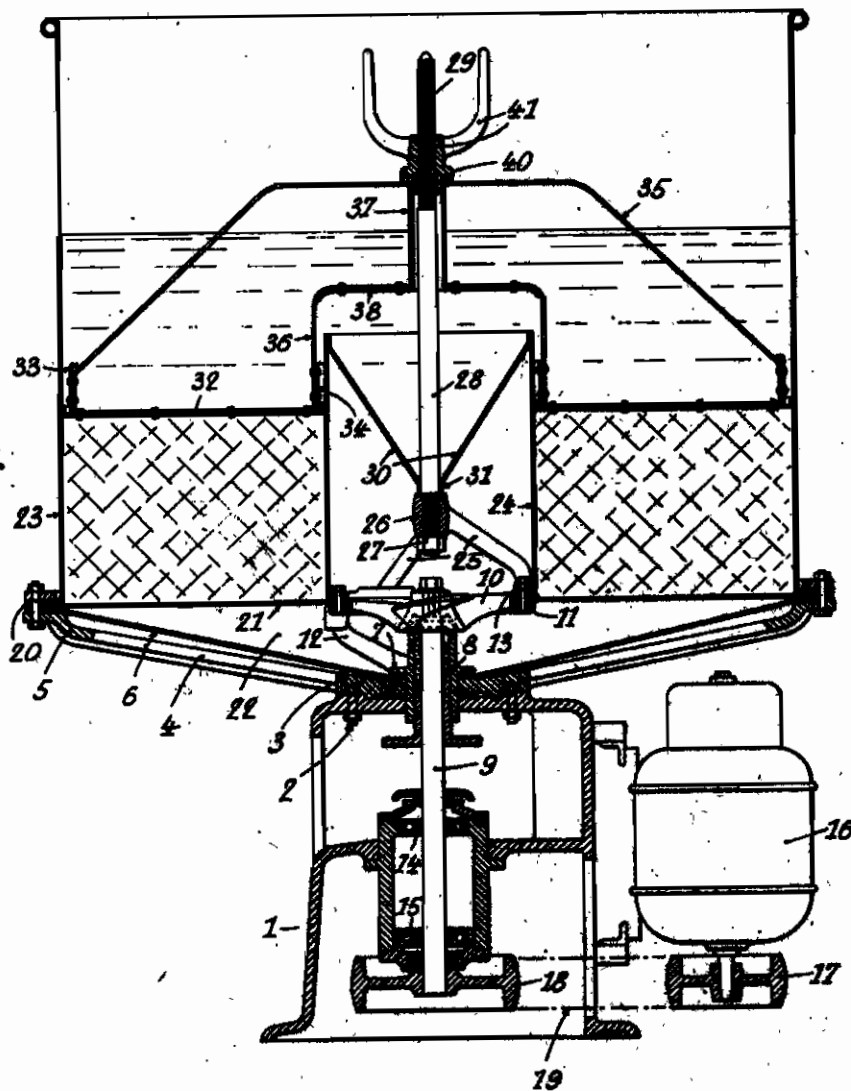


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Fig. 1



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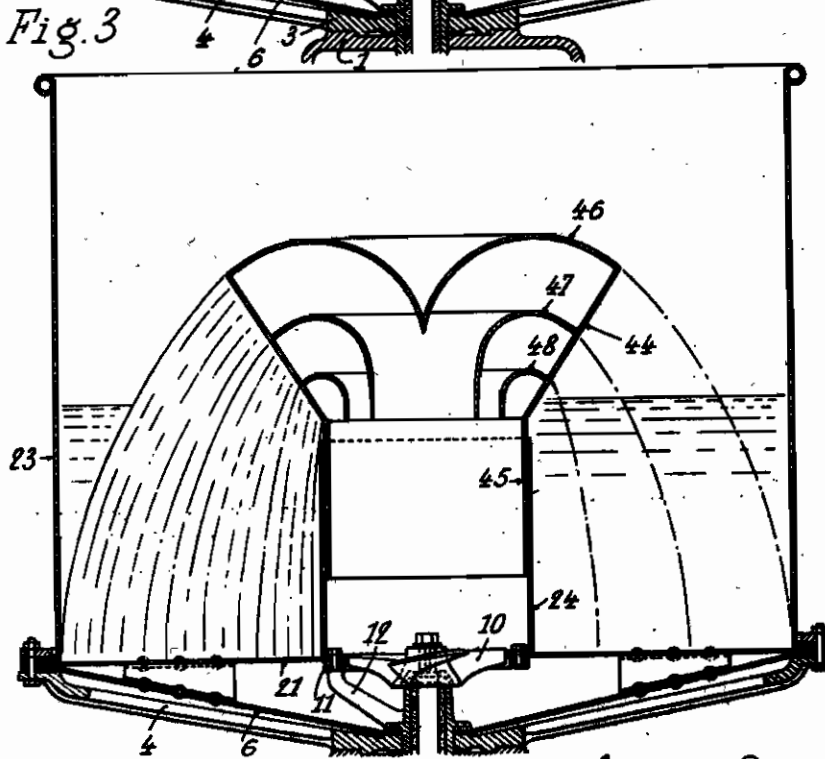
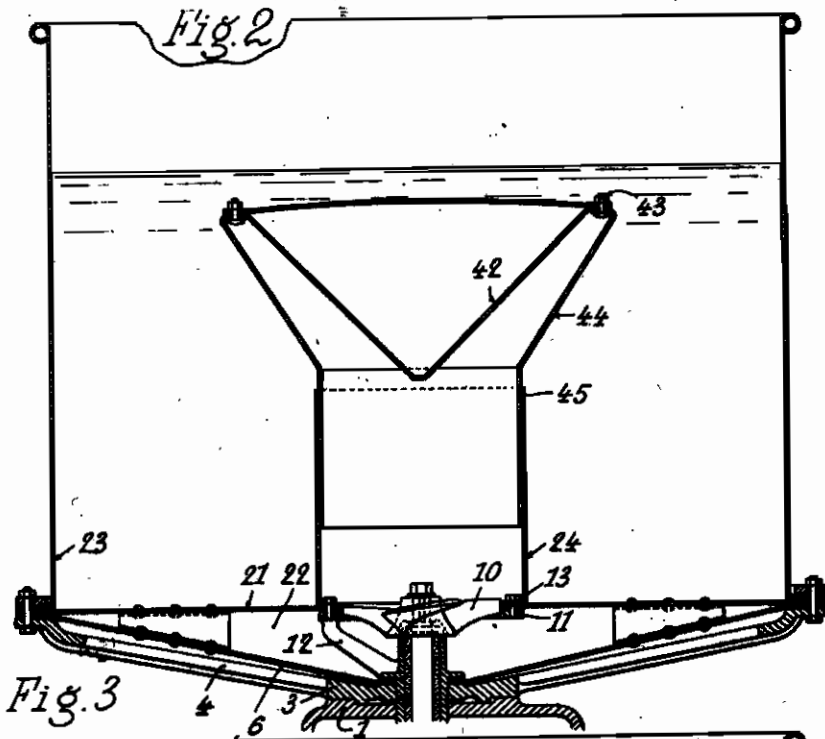
MACHINES FOR TREATING TEXTILE MATERIAL

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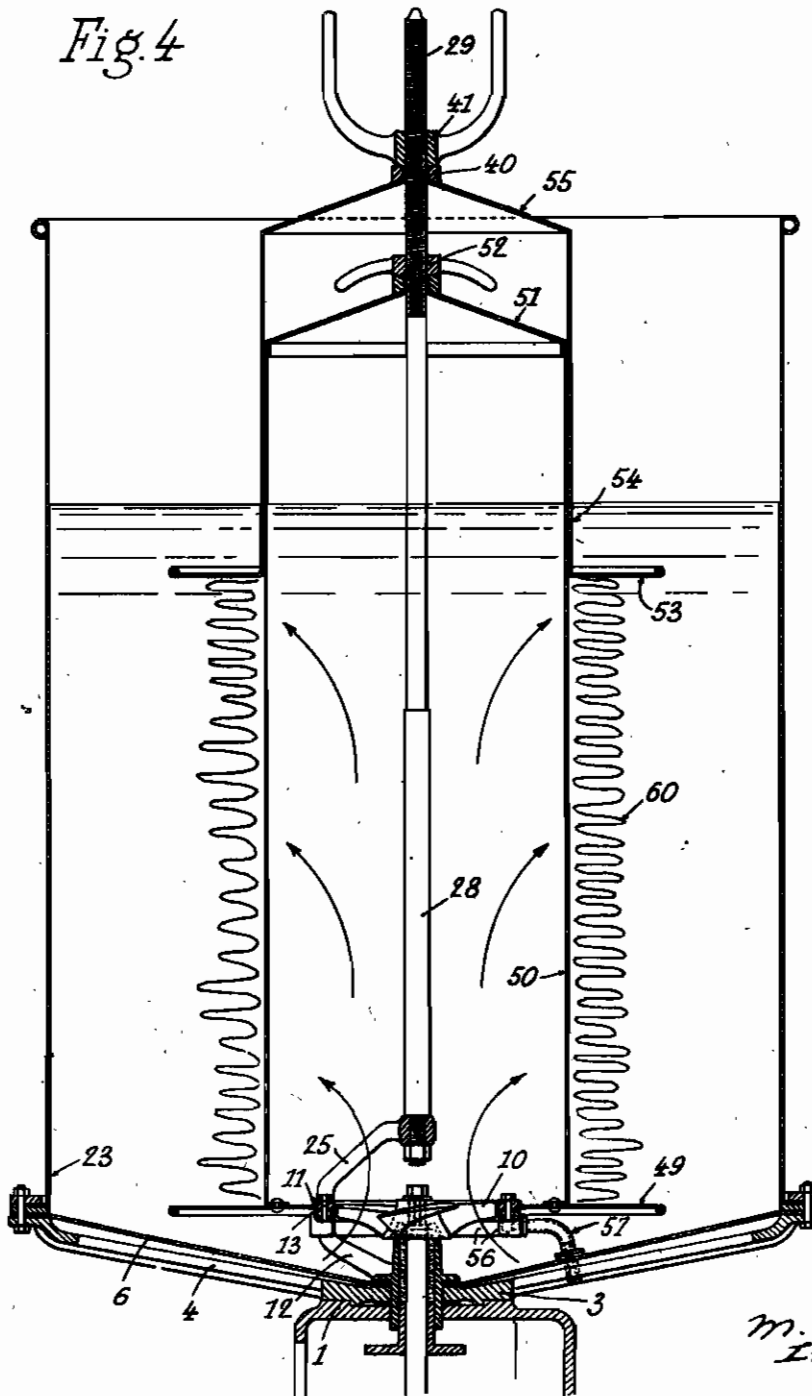
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Fig. 4



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ALIEN PROPERTY CUSTODIAN

MACHINES FOR TREATING TEXTILE MATERIAL

Marcel Cassé, Essonnes, France; vested in the
Alien Property Custodian

Application filed January 18, 1939

The present invention relates to an improved machine particularly adapted to be used for the dyeing, washing or finishing of textile materials and comprising a vat in which the bath is circulated in one direction or alternately in opposite directions by a propeller or like device which withdraws liquid from a vertical axial conduit or discharges into the same.

The invention has for its general object to provide a machine of this type of simple construction, having a great efficiency and which may be readily transformed to suit the different works to be performed. The invention therefore consists of a machine of the above-mentioned type in which the propeller or like device ensuring the circulation of the liquid is located at the lower part of the vat in the interior of a fixed ring to which it is possible to secure, according to the operation to be performed, together or separately, one or more independent removable parts, such as a perforated false bottom adapted to divide the said vat into two superposed compartments, and one of a plurality of longitudinal axial conduits of different lengths, diameters and arrangements according to the particular work for which each of these is adapted.

The invention further consists of a set of axial conduits of large diameter, which may be mounted on the ring of the machine, and of a set of deflectors, adapted to be mounted on the conduit employed.

In the accompanying drawings, which are given solely by way of example:

Fig. 1 is a vertical longitudinal section of a machine in conformity with the invention.

Figs. 2, 3 and 4 are similar partial sections, showing modified forms of deflectors and conduits.

In the embodiment shown in Fig. 1, the machine comprises a fixed part, which is adapted to receive various removable parts.

The fixed part comprises a hollow base or frame 1 to which is secured by bolts 2 or the like, a hub 3 connected by radial arms 4 to a ring 5. Upon the said ring rests and is secured a solid bottom 6, of frusto-conical or like form, the central part of which is clamped between the member 3 and a flange 7 of the external body 8 of a stuffing-box.

Through said stuffing box extends the upper end of a vertical shaft 9. To this end is keyed, at a point above the bottom wall 8, a propeller 10 or like device adapted to set up, according to its direction of rotation, a rising or descending axial current of the liquid.

The propeller 10, or the like, is surrounded by a ring 11 which is secured by a number of arms 12 to the body 8 of the stuffing-box. The ring 11 is provided with bolts or screw-studs 13, or like means for attaching the removable accessories which will be further described.

The shaft 9 which extends downwardly from said stuffing-box is supported for example by ball-bearings 14 and 15 and may be driven in rotation in either direction by a motor 16 or other prime-mover, for example through a transmission comprising pulleys 17 and 18 and a belt 19.

The fixed device above described is completed by removable accessories which in the case of Fig. 1 are as follows:

On the ring 5 there are secured by bolts 20 or the like, together with the bottom 6 and with interposed packing material, a perforated wall 21 forming a false bottom and a cylindrical wall 23 forming a vat.

On the ring 11 surrounding the propeller 10 there are secured by bolts 13 the edge portion of the false-bottom 21 bounding a central opening provided in said false bottom and a tube 24 with solid walls forming an axial conduit of large side (its diameter may exceed $\frac{1}{4}$ even $\frac{1}{2}$ of the diameter of the vat 23), and one or more arms 25, carrying a nut 26 in which there is screwed and locked by a nut 27, or otherwise secured, a vertical axial rod 28 terminating in a threaded portion 29.

The tube 24 is preferably connected at its upper end to a perforated rosehead 30 which is slidable on the rod 28.

On the tube 24, there is slidably mounted a perforated basin 32 to which are secured an outer ring 33 and a central ring 34. The said rings have secured thereto suitable cross-braces 35 and 36 which are connected together by an axial tube 37. At the lower part of said tube, the arms 36 carry a solid disc 38 forming a deflector.

The tube 37 carries at its upper end an abutment member 40 through which extends loosely the rod 28 and on which bears a wing-nut 41 or the like, which is screwed upon the threaded portion 29 of the rod 28.

The operation is as follows. The goods to be treated, such as hairs, fabrics, stockings etc. are placed in the vat 23 on the perforated bottom 21. The disc 32 and the deflector 38 are then put in place, and their height is adjusted by the nut 41. The vat 23 contains the treating bath, in the compartment 22.

The propeller 10 is then set in rotation in the direction in which it will withdraw liquid from

the compartment 22 below the false-bottom 21 and will discharge it into the conduit 24. Owing to the large cross-section of the said conduit, the output of liquid may be considerable. By the action of the deflector 38, the stream of liquid is deflected downwardly, and the liquid is supplied in great quantity upon the whole surface of the disc 32. The liquid then returns to the compartment 22 by circulating downwardly through the perforated wall 21, against which it applies the goods under treatment.

The propeller 10 thus produces a constant and powerful current which applies the goods to be dyed against the false bottom 21. The goods will thus have no movement and in the case of stockings or half-hose, for instance, they will not become entangled, and they may therefore be simply put in bulk into the machine.

Pieces of fabric can also be dyed in the machine and for this purpose they are placed in spiral fashion in the vat 23 in such way as to form a layer of substantially uniform thickness.

If the disc 32 does not press upon the goods, the propeller can be stopped at certain times. The goods to be dyed will then leave the perforated false bottom 21 and will float. When the propeller is again operated, the goods will be again drawn by suction upon the bottom 21, but they will have changed their places and their folds, and will be uniformly dyed.

For other goods, it may be useful to effect a periodic reversal of the direction of rotation of the propeller 10. This reversal may be automatic or may be controlled manually by the dyer. It is in this case that the disc 32 is useful. The goods to be dyed are lifted by the current of the bath and come against this perforated wall which prevents the goods from following the bath and from being drawn into the conduit 24.

For the dyeing of raw textile fibres or of certain goods in bulk, the goods are placed upon the perforated false bottom 21, and the perforated disc 32 is pressed upon them in such way as to hold them fast when the current of the bath is reversed, in order to prevent them from felting together, for example.

In the modification shown in Fig. 2, the deflector consists of an axial inverted cone 42 having solid walls, which is secured at 43 to the large base of an inverted perforated tapered member 44, which is preferably extended by a perforated cylindrical part 45 which is slidable in the conduit 24, for the vertical adjustment.

The inclination of the generatrices of the said tapered member 44 is such that the streams of water or other liquid issuing from the perforations of this tapered member will be directed towards the perforated bottom 21 so as to provide for a distribution of the output as uniform as possible upon this bottom. The internal cone with solid walls 42 subdivides the vertical ascending stream, and provides for a uniform circulation of the bath within the perforated tapered member 44.

One of the advantages of the member 44 over a simple cylindrical perforated tube (or provided with a grating) extending the tube 24, is that it permits of reversing the current of the bath, without the goods in process of dyeing being withdrawn by the suction of the propeller 10, while at the same time maintaining an appreciable output, as the perforated surface of the said tapered member is greater than the surface of a cylinder of the same height, and for this reason is therefore less liable of being stopped by goods applied against it.

In the modification shown in Fig. 3, the slidable tube 45 has solid walls, and the perforated tapered member 44 comprises, in its interior, concentric circular deflectors 46, 47, 48 having curved surfaces of revolution, which are adapted to change the direction of the upward current of the bath, and to direct the bath in such a way that it will descend and will be distributed upon said false bottom 21 according to any desired law, for example, in a uniform manner.

In the modification shown in Fig. 4, the false bottom 21 represented in the preceding constructions is replaced by a simple disc 29, to which is secured the cylindrical perforated tube 50.

This tube 50 is closed at the top by a solid wall 51 and a nut 52. The disc 49 forms a flange. Another flange 53, which is removable, is provided at the upper part and is mounted on a sleeve 54 which fits upon the tube 50 and comprises an end wall 55 on which bears the nut 41 screwed on the threaded end 29 of the rod 28, thus providing for the vertical adjustment of the position of the said flange 53.

This device can be used to great advantage for the dyeing of pieces of fabric. The fabric may be wound around the perforated cylinder 50 (the height of said cylinder being in this case equal to the width of the fabric). In the case of a tubular piece of fabric, the said fabric is threaded at 80 over the perforated cylinder, after having removed the flange 53.

A second perforated cylinder having a larger diameter than the preceding may be placed around this latter in order to limit the movement of the piece of fabric placed around the conduit 50 when the current of the bath is reversed.

If desired a device for heating the bath may be provided. The device may advantageously consist of a perforated steam header 56, concentric with the propeller 10, secured to the ring 11 and supplied with steam through a conduit 57, the steam jets being upwardly directed. This steam will heat the bath, and the jets, by their action, will aid in the circulation of the bath.

Obviously, an indirect heating device may be employed, which may consist of a steam carrying coil arranged in the compartment 22.

MARCEL CASSÉ.