Oct. 28, 1924. 1,513,588

A. F. DEHNERT

LACE FINISHING MACHINE

Filed Nov. 9, 1921

Fig. 1.

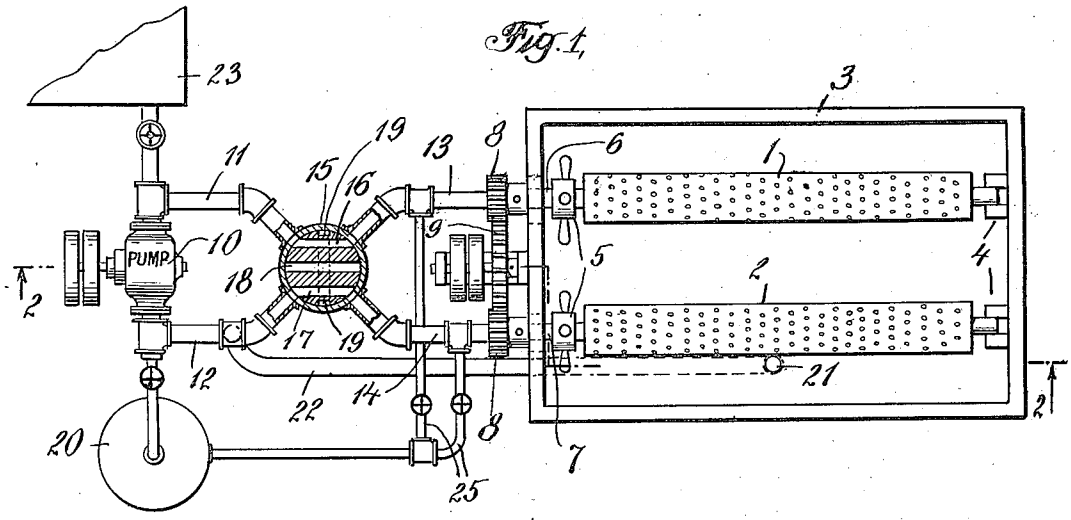


Fig. 2.

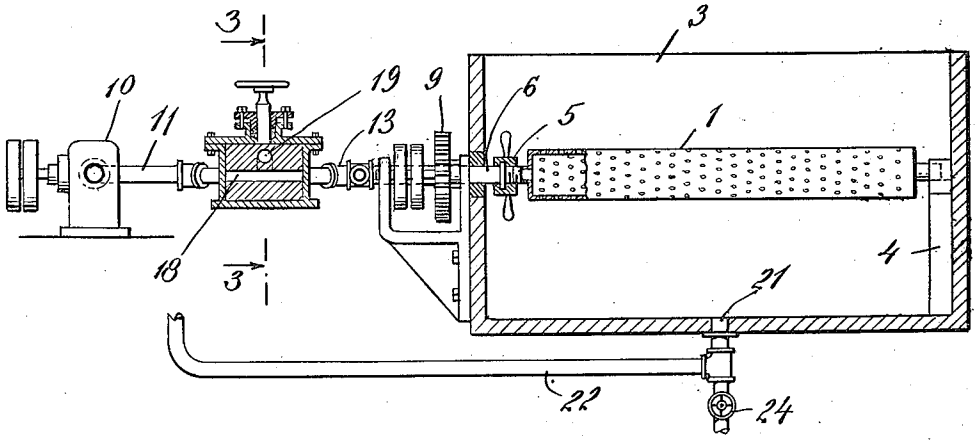
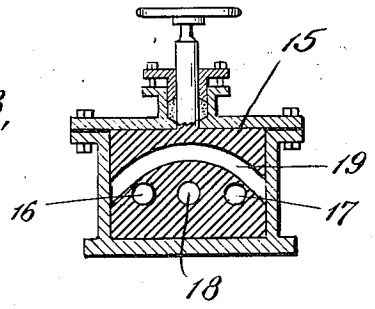


Fig. 3.



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LACE-FINISHING MACHINE.

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To all whom it may concern:

Be it known that I, ALFRED F. DEHNERT, a citizen of the United States, residing in the city, county, and State of New York, have invented a certain new and useful Improvement in Lace-Finishing Machines, of which the following is a specification.

This invention relates to an improved finishing machine intended for use in the operations of bleaching, dyeing, or etching laces, embroideries and similar materials.

The machine, broadly described, comprises a tank containing one or more pairs of demountable rotary hollow perforated cylinders, and means for alternately reversing the flow of the finishing liquid through the cylinders of each pair.

The principal object is to provide a machine that will saturate or impregnate the material wound on each of the cylinders thoroughly and uniformly with the finishing liquid.

A further object is to provide means for withdrawing the liquid from the tank so that it may be used again in the same operation of the machine or stored for future use.

Another object is to provide a suction tank in which the cylinders, with the material still wound thereon, may be placed for the purposes of removing the surplus liquid and of drying the finished material.

With these and other objects in view, the invention consists in the novel features of construction, arrangement and combination of parts hereinafter described, it being understood that modifications may be made without departing from the invention.

In the accompanying drawings illustrating one embodiment of the invention,

Figure 1 is a diagrammatic plan view of the entire machine,

Figure 2 is a sectional elevation taken on the line 2—2 of Figure 1, with one of the cylinders partly broken away, and,

Figure 3 is a detailed section of the reversing valve taken on the line 3—3 of Figure 3.

Referring to the drawings, 1—2 indicate a pair of hollow perforated cylinders each adapted to carry a roll of the material to be finished. 3 is a tank having bearing blocks 4 in which one end of each cylinder is demountably supported. The opposite ends of the cylinders are detachably connected by couplings 5 with the hollow shafts 6 and 7 respectively. Said shafts have bearings in one end of the tank and are arranged to be rotated, so as to rotate the cylinders, by means of gears 8 meshing with a driving gear 9.

10 is a rotary pump of any suitable construction having a discharge pipe 11 and a suction pipe 12. Said pipes are alternately connected, through suitable valve means, with pipes 13 and 14 which lead respectively, through the hollow shafts 6 and 7 to the cylinders 1 and 2, whereby to intermittently reverse the flow of the liquid.

The valve means which I prefer to employ comprises a four-way valve 15 having two passages 16 and 17 which in one position, as shown in Figure 1, connect the discharge pipe 11 with the pipe 13, and the suction pipe 12 with the pipe 14. The valve has two other passages 18 and 19 which when the valve is turned through an arc of approximately 45 degrees, connects the pipe 11 with the pipe 14, and the pipe 12 with the pipe 13. In the intermediate position, the valve closes the openings of all four pipes.

By turning the valve 15 at intervals, either manually or mechanically, the direction of flow through the cylinders 1 and 2 can be alternately reversed. The intermittent reversal of the current assures a thorough and uniform action of the liquid on the material carried on each cylinder.

When the finishing operation is completed, the cylinders are connected through the pipe lines 25 with an exhaust chamber 20, to which suction is applied by suitable connections with the pump so as to extract the surplus liquid from the material while it is still wound on the cylinders. To apply suction for this purpose the valve 15 is closed and the valves of the pipe lines 25 are opened.

The character of the finishing liquid employed will depend upon whether the machine is being used for bleaching, dyeing or etching. The composition of the required liquids for each of said operations is well known to those skilled in the art.

The tank 3 has an outlet 21 which connects through a pipe 22 with the suction pipe 12 of the pump, and whereby the liquid may be

withdrawn from said tank and conveyed to the supply tank 23. A drain pipe 24 is provided to permit of draining the tank.

What I claim is:—

1. In a machine of the character described, the combination of an undivided tank, a pair of hollow perforated cylinders within the tank, means for rotating the cylinders, a pump having communication with the interiors of both cylinders and adapted to cause liquid to circulate from the interior of one cylinder to and through the interior of the other, and a valve for reversing the direction of flow.

2. In a machine of the character described, the combination of an undivided tank, a pair of hollow perforated cylinders demountably supported within the tank, means for rotating the cylinders, a pump having communication with the interiors of both cylinders and adapted to cause liquid to circulate from the interior of one cylinder to and through the interior of the other, and a valve for reversing the direction of flow.

3. In a machine of the character described, the combination of an undivided tank, a pair of hollow perforated cylinders supported within the tank, means for rotating the cylinders, a rotary pump having discharge and suction passages, pipe lines between said passages and the interiors of the cylinders, and a four-way valve in said pipe lines operative in one position to connect one of the cylinders with the discharge passage of the pump and the other with the suction passage thereof, and in another position to reverse said connections.

ALFRED F. DEHNERT.