(No Model.)

R. J. GATLING.

APPARATUS FOR CLEANSING WOOL OR OTHER MATERIAL BY THE USE OF STEAM OR OTHER FLUID.

No. 469,822. Patented Mar. 1, 1892.

Fig. 1

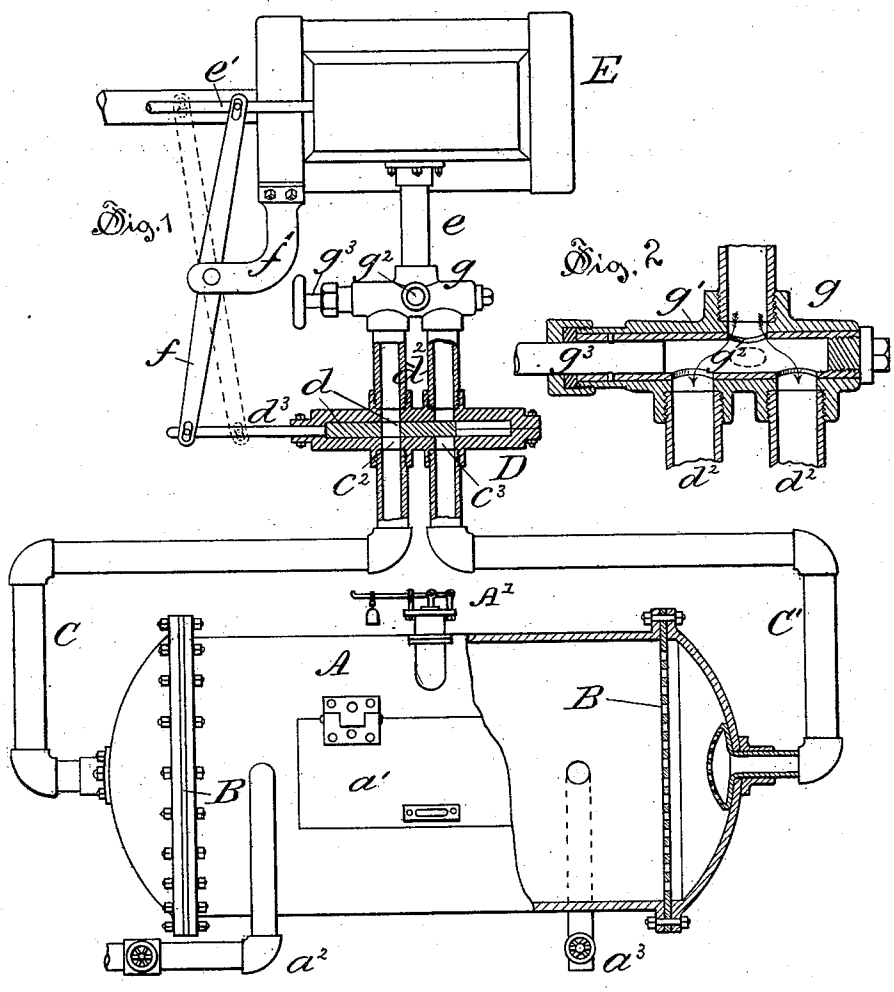

Fig. 2

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UNITED STATES PATENT OFFICE.

RICHARD J. GATLING, OF HARTFORD, CONNECTICUT.

APPARATUS FOR CLEANSING WOOL OR OTHER MATERIAL BY THE USE OF STEAM OR OTHER FLUID.

SPECIFICATION forming part of Letters Patent No. 469,822, dated March 1, 1892.

Application filed December 30, 1887. Serial No. 259,362. (No model.)

To all whom it may concern:

Be it known that I, RICHARD J. GATLING, of Hartford, in the county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Apparatus for Cleansing Wool or other Material by the Use of Steam or other Fluid, of which the following is a clear, full, and exact description, whereby any one skilled in the art can make and use the same.

The object of my invention is to provide an apparatus by means of which wool or other raw fibrous material and also clothing or like fabrics may be cleansed with but little wear and tear in the operation; and to this end my invention consists in details of the several parts making up the apparatus as a whole, and in their combination, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a diagram view of one form of my cleansing apparatus with parts shown in longitudinal section. Fig. 2 is a detail view, on an enlarged scale, in a central section of the three-way valve or gate.

In the accompanying drawings, the letter A denotes the tank, in which the wool or other material is held while being cleansed, an opening in the side of the tank being provided with a door a' as a means of access to the tank. The pipes a^2 a^3 serve as inlets and outlets, respectively, for the fluid used in washing or for the removal of waste matter resulting from the cleansing. At each end of the tank there is secured within it a diaphragm B, that is perforated for the passage of fluids, but forms a wall that operates to stop the motion of any material or fabric being cleansed.

The ends of the steam-pipes C C′, that enter the opposite ends of the tank, are provided with flaring mouth-jets that subdivide the inflowing current of steam or other fluid into separate small streams that rush into the tank with considerable force and throw the article being cleansed back and forth as currents of steam or other fluids are intermittently and alternately thrown into the tank at the opposite ends. The steam-pipes C C′ branch from a valve-chest D, in which a valve d is located, so that by the movement of said valve the steam that enters the valve-chest by the pipes d^2 is directed alternately through the ports c^2 c^3 into said steam-pipes C C′. This valve-chest is connected to the exhaust-pipe e of the steam-cylinder E, and the valve d is pivotally connected to the engine valve-rod e' by means of the intermediate lever f, that has a fulcrum on a suitable standard f', and is pivotally connected to the rod e' at one end, the pivot-holes being slotted to allow for the proper connection of the swinging lever with the rods that have a rectilinear movement.

The tank A is provided with a suitable pressure-valve A′ to permit the escape of the surplus fluid from the tank.

The operation of the device is as follows: The tank has a source of fluid-supply that may be through the exhaust-pipe from the cylinder of an engine, as described, or from any other source, being connected, as described, to the tank. The wool or other material or article to be cleansed is introduced into the tank through the door and the proper valves opened to turn the fluid into the tank. As already stated, the steam is forced in jets through the opposite ends of the tank against the contents and tends to throw said contents alternately from end to end, thoroughly beating and cleansing them.

The tank A is located below the level of the steam-cylinder in the form of apparatus above described, in order to prevent the return flow of any water of condensation to the engine, and provision is made to temporarily connect the apparatus to the exhaust by the use of the three-way valve g, into which exhaust-pipe e leads. In the body g of this valve or gate there are two openings, into which the pipes d^2 enter, and a third opening for the outlet-flow of the exhaust-steam when the ports leading to the tank are closed. The rotary spindle g^3 of this valve is hollow, (see Fig. 2,) and has three openings or ports, two opening with the pipes d^2 when the exhaust-outlet is closed and the third that opens with the exhaust-outlet g^2 when the former are closed.

I claim as my invention—

1. In combination with a source of fluid-supply, the pipes branching from a valve to opposite ends of a tank, the tank with perforated diaphragms located near its opposite ends and provided with a door or like means of access in the wall of the tank, and means, as described, for admitting the fluid alternately to opposite ends of the tank, all substantially as described.

2. In combination with a tank having a door or like means of access in the wall of the tank, perforated diaphragms located at the opposite ends of the tank, the inlet-pipes at the opposite ends of the pipe, having perforated jet devices, the fluid-pipes branching from a source of fluid-supply to opposite ends of the tank, and a valve by means of which steam or like fluid is admitted alternately into the several branches of the pipe, all substantially as described.

3. In combination with a tank A, having a door *a* or like means of access, the inlet-pipes C C′ at the opposite ends of the tank and branching from the exhaust-pipe of a steam-engine, the valve D in said pipe, by means of which steam is admitted alternately into the two branches of the pipe, and the lever F, connecting the valve-rods of the engine and of the valve *d* in the exhaust-pipe, all substantially as described.

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