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COIL CLEANING MACHINE

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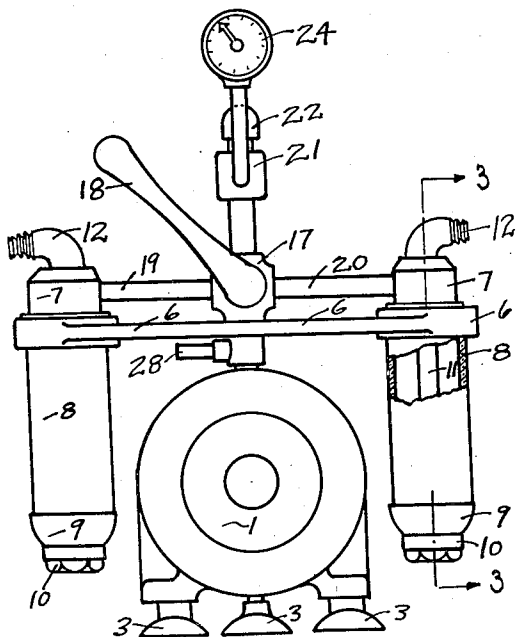


FIG 1

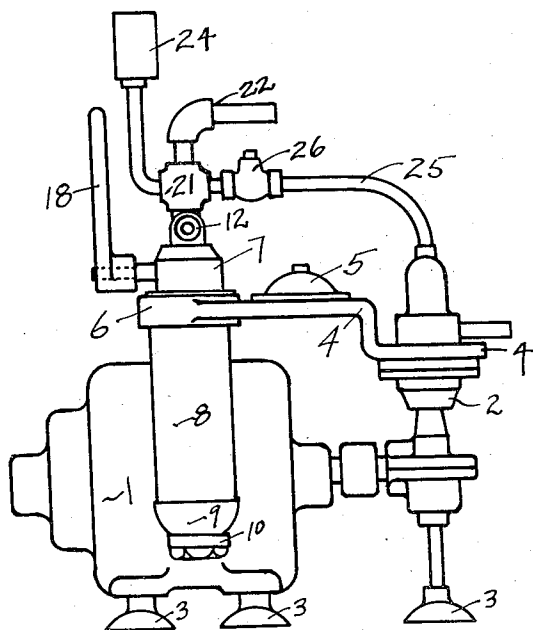


FIG 2

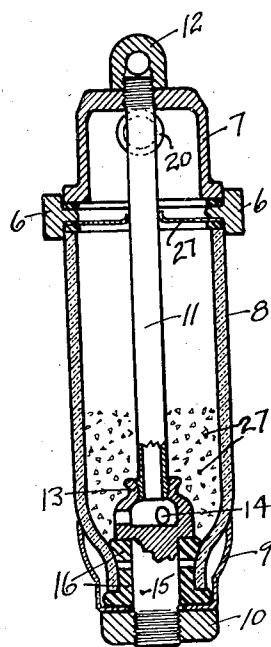


FIG 3

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COIL CLEANING MACHINE

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2 Claims. (Cl. 225—12)

This invention relates to coil cleaning machines.

The principal object of this invention is to provide a safe and sure method of cleaning coils, and more particularly of cleaning beer coils or other cooling or refrigerating coils.

A further object of this invention is to provide a visible means of determining the results of the cleaning action being performed by the machine.

A further object is to provide a coil cleaning machine that will force the cleaning agents through the coils in either direction.

A further object of this invention is to provide a coil cleaning machine using air and water under pressure together with crystals of glass or other like material.

A still further object is to provide a coil cleaning machine in a single unit, light in weight, simple in design, and readily portable.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein:—

Figure 1 is a front elevation of a coil cleaning machine.

Figure 2 is a side elevation of a coil cleaning machine.

Figure 3 is a cross section taken on lines 3—3 of Figure 1.

The numeral 1 designates an electric motor. This motor 1 is directly connected to an air compressor unit 2 of the diaphragm type. Both the motor 1 and the air compressor unit 2 are mounted on vacuum cups 3. A frame 4 holds the air compressor unit 2 and the motor 1 in proper position and supports an electric switch 5 controlling the motor 1. The frame 4 has side arms 6, each of which support a mixing chamber 7 comprising a head portion 7, a circular glass body portion 8, a cover portion 9, and a nut 10, these units being assembled on a tubular member 11 which is threaded into the head portion 7 and into a coupling 12. (See Fig. 3.) This tubular member 11 has threaded on to its lower end an enlarged circular member 13. This enlarged circular member 13 is provided with openings 14, and has formed on its lower extremities a tubular member 15. This tubular member 15 is also threaded at its lower end for receiving the nut 10.

In connection with this tubular member 15, the nut 10, and the circular glass body portion 8 there are a plurality of rubber washers 16 for the purpose of providing an air-tight seal on the lower end of the glass body portion 8. This construction is shown in detail in Figure 3.

By referring to Figure 1 it will be seen that directly over the center of the motor 1 there is provided a four-way valve 17 having a handle 18. This four-way valve 17 has tubes 19 and 20 extending to the head portions 7 of the mixing chambers. Directly above this four-way valve 17 there is a four-way fitting 21. This fitting receives the water supply from a pipe 22 and the air supply from a pipe 23 and also has attached to it a pressure gauge 24.

In using the device it operates as follows:—

Connections are made by means of rubber tubing between the coupler 12 and the ends of the coil to be cleaned. A water connection is made to the pipe 22 and the electric motor 1 is started by means of the switch 5. The electric motor 1 operates the air compressor 2 supplying air through a pipe 25 and a check valve 26 to the four-way fitting 21 where it mixes with the water and flows down through the four-way valve 17 out through the pipe 19 and into the head 7, then down into the mixing chamber where it enters the tubular member 11 through the fitting on its lower end. At this point the flow of air and water picks up a number of crystals 27. This mixture of air, water, and crystals goes up through the tubular member 11 into the coupler 12, and thence into the coil to be cleaned. After passing through the coil, the mixture of air, water, crystals and dirt from the coil is returned to the opposite side of the machine through the other coupler 12. The mixture then passes down through the tubular member 11 and emerges through the fitting at its lower end. At this point the tapered lower end of the glass body portion 8 causes the mixture to be thrown upwardly thus churning up any crystals that may have been deposited around this fitting. The mixture then rises in the glass body portion 8 to a screen 27 through which the crystals cannot be carried. The mixture of water, air, and dirt, flows through the screen and into the head 7 and thence out through the pipe 20 and into the four-way valve 17 where it is directed downwardly and out through a discharge tube 28.

After the machine has been in operation for some time the supply of crystals becomes completely transferred to one of the mixing chambers where it is visible through the glass body portion 8. At this time the handle 18 of the four-way

valve 17 is moved, reversing the position of the valve, thus reversing the entire flow of the cleaning mixture through the machine and coil being cleaned. The flow of the mixture now having
 5 been reversed, the supply of crystals is carried back through the machine through the coil being cleaned and deposited in the opposite mixing chamber, thus returning the crystals to the same place they were when the cycle started.

10 The pressure gauge 24 is simply to show that there is adequate pressure to force the crystals completely through the coil and back into the machine. This machine when operating, averages about 40 pound pressure. In the event that
 15 the air compressor supplies a greater amount of air pressure than the water pressure being supplied to the machine, the excess air merely goes through the machine in the form of bubbles, thus not interfering in any way with the dependable
 20 operation of the device.

It will be seen that my device is simple in construction, readily portable because of its light weight, and capable of doing a thorough cleaning job.

25 What I claim is:—

1. In a coil cleaning machine comprising a frame adapted for mounting on an electric motor and carrying an air compressor unit adapted to be driven by said electric motor, the combination
 30 of a pair of mixing chambers mounted on said frame, a water supply inlet, pipe means for conveying water and air to either of said mixing chambers, a tubular member positioned within each of said mixing chambers for carrying crystals
 35 together with water and air to an outlet leading to a coil to be cleaned, a manually controlled valve for reversing the direction of flow in order

to move the crystals in a reverse direction through the coil to be cleaned into the opposite chamber, a discharge outlet from said valve, a screen positioned in each of said mixing chambers for separating the crystals from the mixture before the
 5 same is discharged from said discharge outlet, substantially as described for the purpose set forth.

2. In a coil cleaning machine comprising a frame adapted for mounting on an electric motor
 10 and carrying an air compressor unit adapted to be driven by said electric motor, the combination of a pair of mixing chambers mounted on said frame, a removable head portion for each of said mixing
 15 chambers, a cover portion inclosing the lower end of each of said mixing chambers, a water supply inlet, pipe means for conveying water and air to either of said mixing chambers, a tubular member positioned within each of said mixing chambers,
 20 an enlarged circular member positioned on the lower end of each tubular member and having a plurality of openings formed therein, a secondary tubular member formed on the lower end of each of the enlarged circular members, a nut positioned
 25 on the lower end of each of said secondary tubular members, an outlet coupling positioned on the upper end of each of said tubular members, a valve for reversibly controlling direction of flow in order to move crystals in a reverse direction
 30 through the coil to be cleaned into the opposite chamber, a discharge outlet from said valve, a screen positioned in each of said mixing chambers for separating the crystals from the mixture before the same is discharged from said discharge
 35 outlet.

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