United States Patent [19]

Ducharme

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[54] **WASHING AND DEGREASING MACHINE**

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[52] **U.S. Cl.** **134/102;** 134/111; 134/200

[51] **Int. Cl.²** **B08B 3/06**

[58] **Field of Search** 134/102, 109, 111, 200

[56] **References Cited**

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Attorney, Agent, or Firm—Pearson & Pearson

[57] **ABSTRACT**

A washing and degreasing machine which comprises essentially a pair of superposed tanks, the lower tank being a reservoir and having a low floor with a high point in the center. The upper tank comprises the washing and cleaning chamber and it contains a spout for leading the degreasing solution upwardly from the reservoir. The pump intake and filter are directly above the high point. There is a drain for the used cleaning solution, also directly above the high point of the floor, to guide flow into the lower tank where dirt and particles will gradually move downwardly from the central high point thereof to the lower level, peripheral, or outside edges where the same can be easily cleaned or removed. The upper tank has a lid with spring rod means to hold it in an overbalanced position and a fusible link so that the lid will automatically close and completely cover the cleaning chamber for the purpose of smothering possible fires.

5 Claims, 4 Drawing Figures

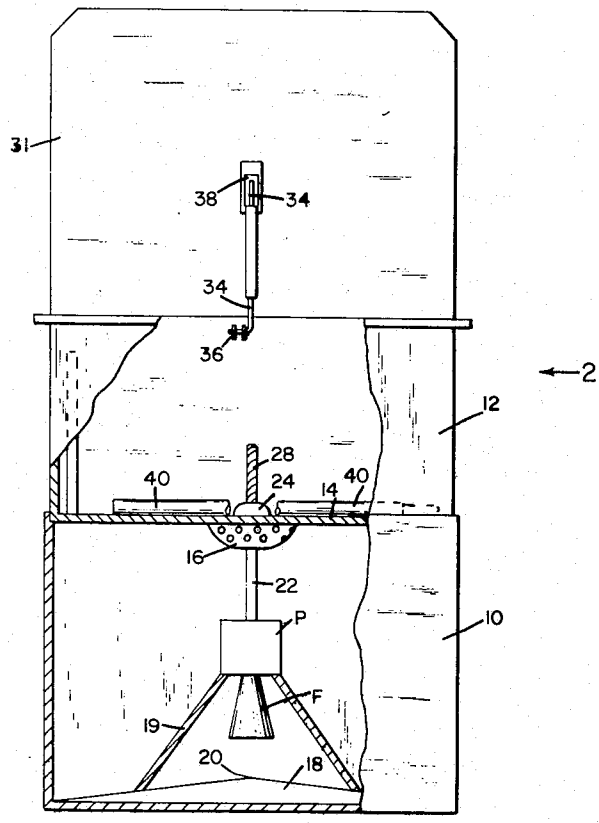


FIG. 1

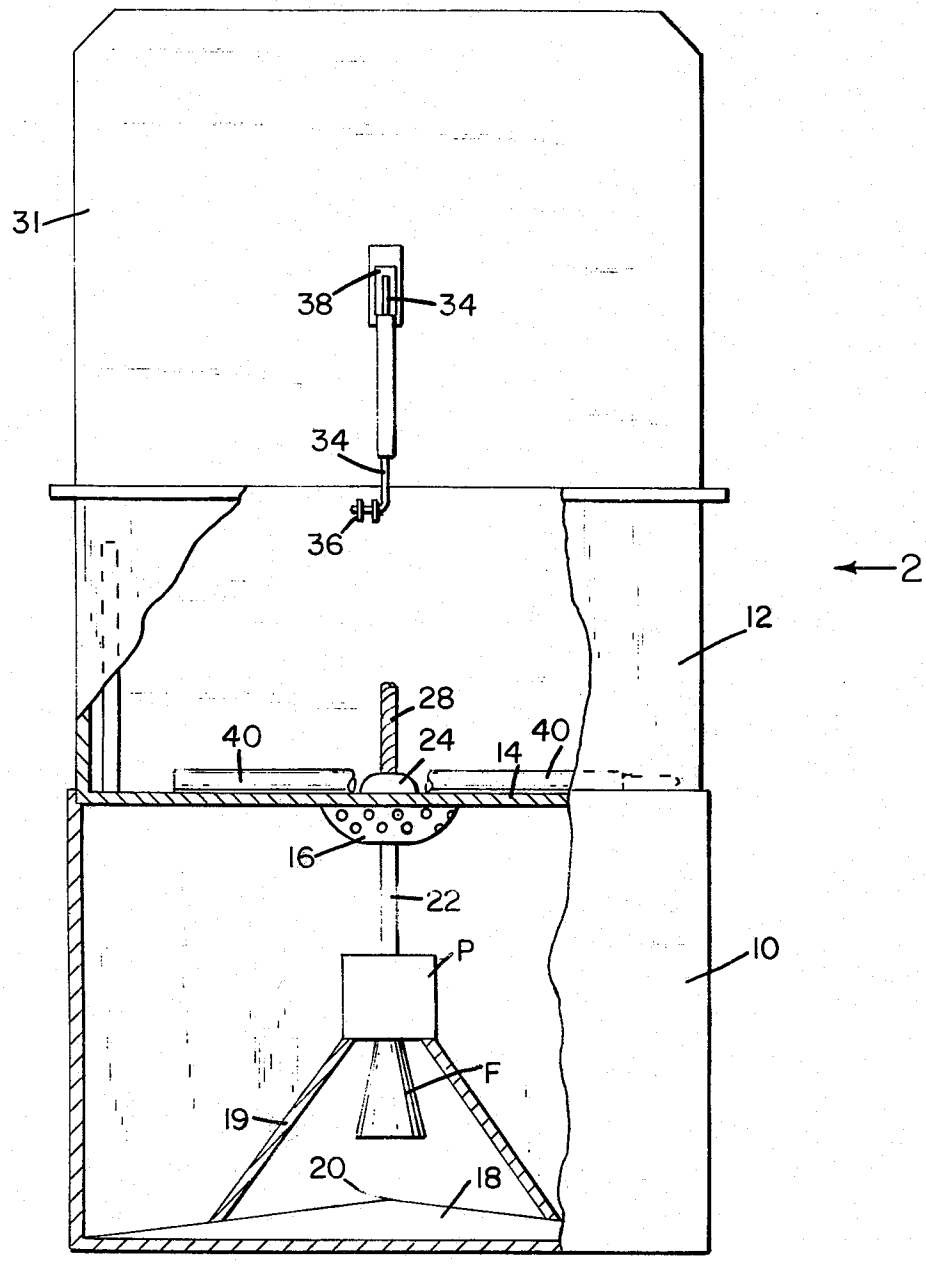


FIG. 3

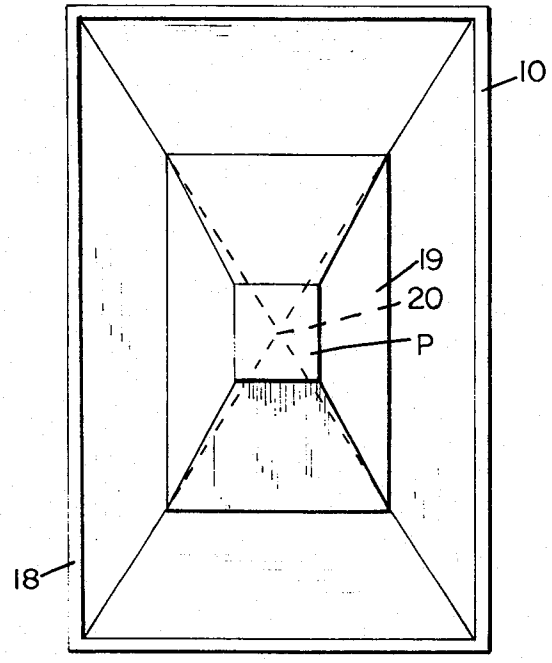


FIG. 2

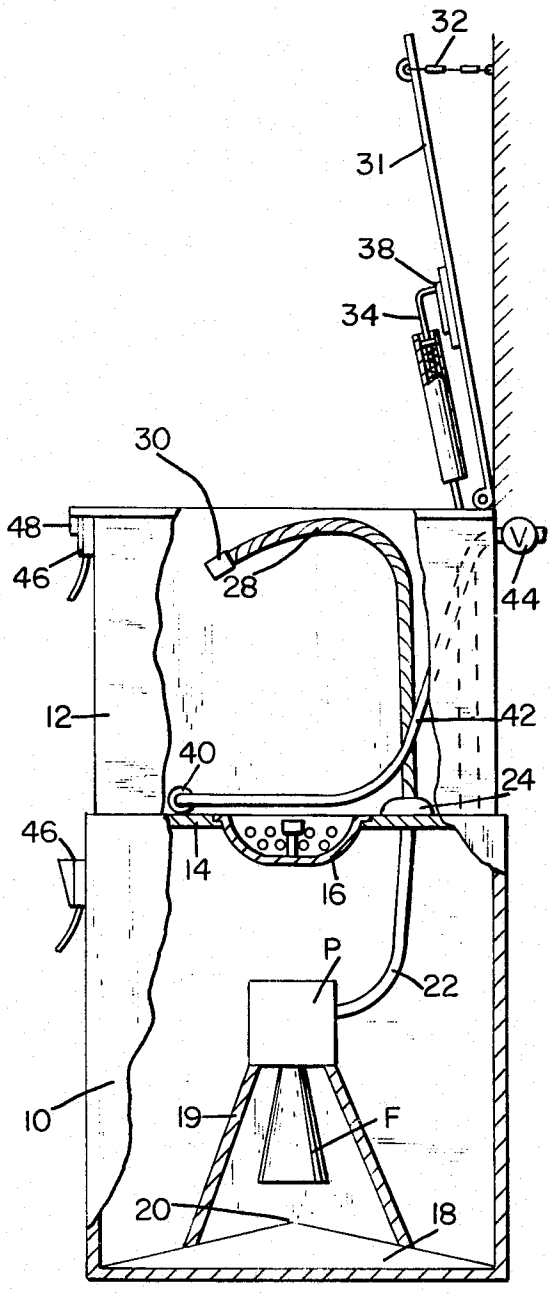
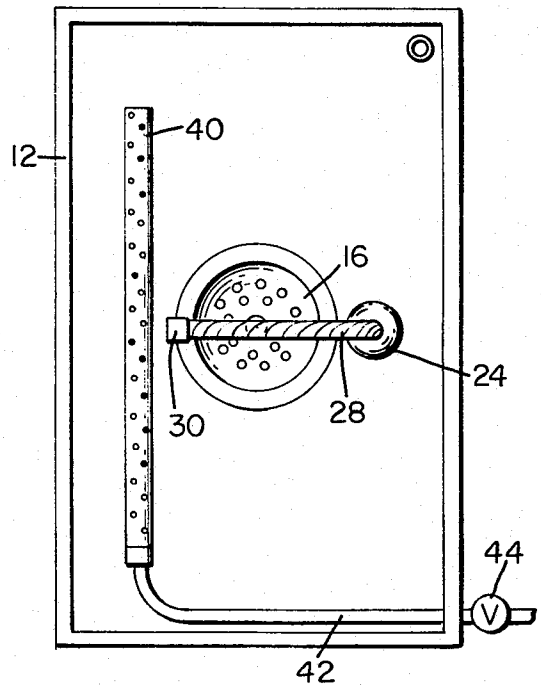


FIG. 4



WASHING AND DEGREASING MACHINE

BACKGROUND OF THE INVENTION

There have been many proposals for handling combustible cleaning fluids, solutions, etc., in cleaning and degreasing machines. Most of them are relatively expensive, hazardous as to fire, and difficult to clean. Obviously in degreasing, a great deal of smudge, dirt, etc., is removed from the articles being degreased and the solution therefore has to be changed frequently or some means provided for filtering the sludge.

SUMMARY OF THE INVENTION

In the present case it has been found advantageous and relatively inexpensive to provide e.g., two tanks, the lower tank being a reservoir and having a low flattish pyramidal floor, with an upright truncated pyramid or cone at the center, with a filtered pump on top. The upper tank has a flexible pipe on a swivel to receive the solution up from the reservoir under pressure in order to be used to spray onto and clean articles needing degreasing. This of course produces dirty solution in the upper tank and a drain is provided for this material to descend by gravity to the reservoir tank below wherein the sludge and dirt gradually slides down the inclines of the pyramid or cone and the floor, collecting the dirt and sludge around the edges of the reservoir.

Preferably the intake for the pump is directly over the highest point of the floor so that the cleanest part of the solution is returned to the cleaning tank above.

An aerator is provided in the upper tank. This conveniently takes the form of a pipe having fine holes in it and the pipe is connected to a source of air under pressure by a flex hose, so the aerator can be moved wherever desired. The aeration facilitates cleaning of parts in the solution in the upper tank even without attention on the part of the operator. This action is enhanced by cracking the drain while setting the inflow to compensate, dirty solution then constantly going out and clean solution in.

A hand, foot, or knee operated switch is used to control the pump and special means is provided to keep this switch closed without attention.

One of the bad features of prior art machines of the class described is that they are particularly hazardous as to accidental fire because the cleaning solutions are combustible. In order to provide against this in the present case the upper tank is provided with an overbalanced lid which would normally close the upper tank by gravity and means is provided for holding this lid in its open but overbalanced condition, said means including a fusible link which upon release due to fire in the cleaning tank will let the lid go and it will automatically shut, smothering the flames in the upper tank. The lower tank has very little access to oxygen in any event and does not readily support combustion because of this fact.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a view in elevation with parts broken away and in section, illustrating the device;

FIG. **2** is an end view looking in the direction of arrow **2** in FIG. **1**, parts being broken away in order to more clearly show the invention;

FIG. **3** is a top plan view of the bottom of the lower tank; and

FIG. **4** is a top plan view of the upper tank.

PREFERRED EMBODIMENT OF THE INVENTION

Although this invention might be encompassed in a single tank having a floor and an intermediate partition it is found easier and less expensive to provide two tanks, a lower solution holding tank **10** and an upper superposed cleaning and washing tank **12.** These tanks may be arranged in any convenient way and the bottom **14** of the upper tank with the interior walls thereof forms a chamber for cleaning articles. The solution in the upper tank can be drained into the lower tank through a sink drain **16.**

The lower tank is provided with side walls and it has for a floor a flattish pyramid construction shown at **18.** The apex or high point of the pyramid is approximately in the center of the floor as at **20.** A truncated pyramid or cone **19** of sheet material having sharply inclined sloping walls is set on the floor. It mounts a pump P having a filter intake F within the pyramid or cone and located directly over the point **20.** The solution passes through a flexible tube **22** to a swivel fixture **24** for a flex pipe **28** having a nozzle **30.** This flex pipe can cover the entire floor of the upper tank due to its flexibility and the swivel fixture **24.**

From time to time the dirty solution in the tank **12** is drained through the drain opening at **16** into the lower tank and the level of the solution in the lower tank will at all times be above the apex **20** of the pyramidal floor **18** so as to be taken in by filtered intake F. The solution of course becomes dirty. In the present case however the dirt, sludge, etc., gradually slides by gravity down the slopes provided by the pyramid or cone, and the floor, so that the dirt collects along the edges of the lower tank, the filter intake taking in the cleanest part of the solution and filtering it. Thus the solution is used much longer than would otherwise be possible.

When not in use a pivoted lid **31** closes the upper tank protecting the same against accidental ignition of the solution therein, the lower tank being protected by the floor **14** of the upper tank which effectively shuts off oxygen to the lower tank. The lid **31** is normally arranged in overbalancing condition which is clearly shown in FIG. **2** so that without something to hold it in place it would not stay in open position. A chain or the like **32** can be used to hold the lid open in the FIG. **2** position and this chain may be applied with a fusible link so that if a fire should start in the tank **12** the fusible link would let go and the lid would descend by gravity to smother the fire. On the other hand in order to place the fusible link in a more vulnerable position to flames in tank **12,** a spring pressed rod **34** may be utilized to hold the lid open, the rod being secured to the back of the tank or to the side walls thereof as for instance at **36.** The fusible link is placed as at **38** and of course rising flames would disrupt the means holding the lid.

Extra features of this invention comprise an aerator in the form of a pipe **40** having fine holes in it and receiving air under pressure through a flex **42** connected through a valve **44** to a source of air. This aerator can be moved where desired to suit different parts being cleaned and the effect is that the air bubbles wash the dirty part continuously and clean it, without any attention. Additionally, the drain can be "cracked" and the intake set to compensate for the solution thereby lost, and the cleaning effect is enhanced with the effluent passing down through the drain and clean solution con-

tinuously entering.

The pump can be controlled by a push type self-opening switch **46,** having a magnet in it, by either foot or knee, or this switch can be closed by wedging it in a pocket caused by a rim **48** on the tank. Hence the pump will continuously operate, see **46'**, FIG. **2,** or it can be closed at will.

In practice an inch or so of water can be placed in the lower tank. The solution is lighter and does not mix, so the water receives the descending dirt and the solution stays clean. As a practical matter, the lower tank can be steel, the switch clinging to it, and the upper tank may be stainless. A bag for the solution and water can be used in the lower tank to prevent corrosion.

I claim:

1. A cleaning and degreasing machine including a reservoir chamber and a superposed cleaning chamber with a bottom, the reservoir chamber having a sloping pyramidal floor with a central high point and lower level outside edges, means pumping the cleaning solution up from the reservoir chamber to the cleaning chamber, said means including a pump, filter and solution intake directly above the highest portion of the sloping floor of the reservoir chamber, and including a flexible tube in said cleaning chamber supplied with solution thereby, and a drain leading from the cleaning chamber to the reservoir chamber centrally located in the bottom of said chamber directly above the said high point of the floor.

2. The machine of claim **1** including water in said reservoir up to the level of said highest point for receiving particles.

3. The machine of claim **1** including an aerator in the upper chamber connected by a flexible pipe to a source of air outside said machine and means for controlling the rate of flow through said drain.

4. The machine of claim **1** plus a lid for the said cleaning chamber, and spring rod means for holding said lid in normally inclined over-balanced condition, but permitting manual closure of said lid, failure of the holding means causing the lid to drop completely, shutting the cleaning chamber,

a fusible link connecting said spring rod means to said lid whereby upon occurrence of flames in the cleaning chamber, the fusible link will fuse disrupting the connection of said spring rod means to said lid and allowing the lid to shut by gravity smothering any flames therein.

5. The machine of claim **1** including an upright, hollow truncated pyramid of sheet material located directly above the high point in said floor, the pumping means being located thereon above the floor, the solution intake being located within the hollow member at a predetermined level above the level of said high point.

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