Nov. 14, 1967 C. C. BOWER 3,353,176

CONTROL SYSTEM FOR FOAM CLEANER GENERATING APPARATUS

Filed Jan. 7, 1965

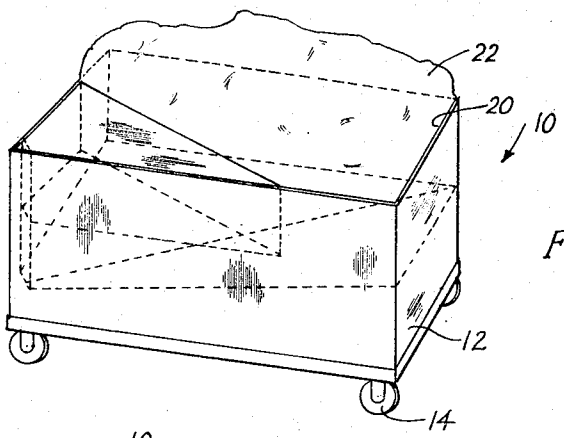


FIG. 1.

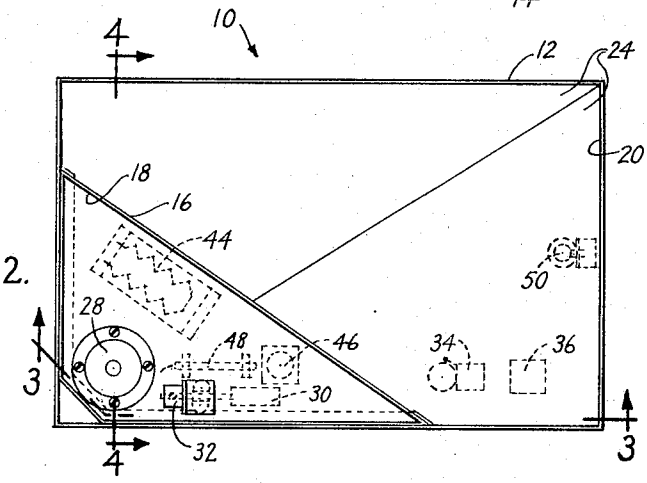


FIG. 2.

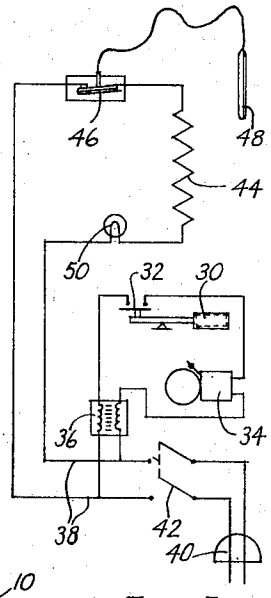


FIG. 5.

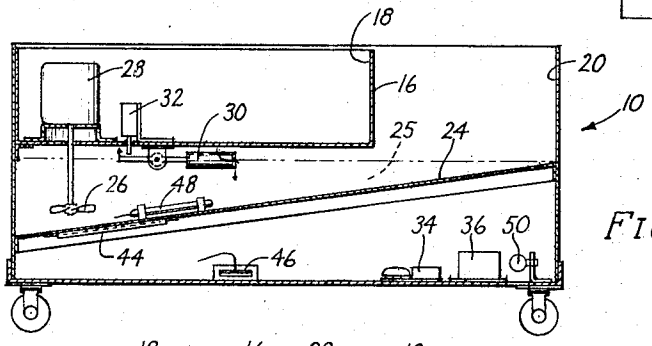


FIG. 3.

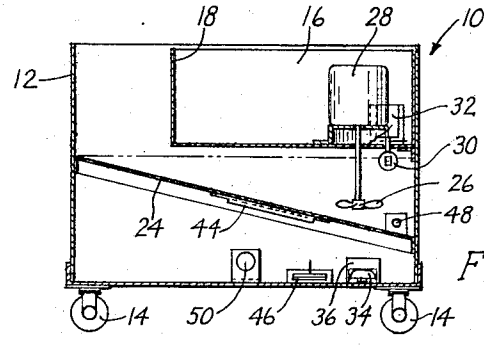


FIG. 4.

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CONTROL SYSTEM FOR FOAM CLEANER GENERATING APPARATUS

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3 Claims. (Cl. 340—417)

This invention relates to foam cleaning apparatus and, more particularly, to an improved control system for foam cleaning apparatus.

It is an object of the present invention to provide a foam cleaning machine with an improved form of control system which will effectively maintain the foam solution at a proper temperature level for maximum efficiency.

Another object of the present invention is to provide a float operated signal device which will effectively provide a warning signal as soon as the liquid level of the foam solution diminishes beyond a predetermined level, to ensure proper replenishment thereof for more consistent and efficient production of foam at all times.

An additional object of the present invention is to provide control mechanism of the aforementioned type for foam treating machines which can be readily installed without interfering with the normal operation of the machine or the operating parts thereof.

Another object of the present invention is to provide a control system for foam generating apparatus of the above type which operates completely independently of the foam generating mechanism and which has independent controls therefor.

All of the foregoing and still further objects and advantages of this invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing, which illustrates the control system of the present invention in conjunction with a foam generating machine.

FIGURE 1 is a perspective view of the foam cleaning machine equipped with a central system made in accordance with the present invention;

FIGURE 2 is an enlarged top plan view of the apparatus shown in FIGURE 1;

FIGURE 3 is a transverse cross sectional view taken along line 3—3 of FIGURE 2;

FIGURE 4 is a transverse cross sectional view taken along line 4—4 of FIGURE 2; and

FIGURE 5 is a schematic wiring diagram of the control mechanism made in accordance with the present invention.

Before proceeding with a detailed description of the drawing, it is to be emphasized that the present invention relates only to the control system and not to the specific foam producing machine, which is shown and described only for clarity and understanding of the invention.

Referring now to the drawing, the control system of the present invention is shown in use with a foam cleaning machine **10** made in accordance with the present invention and is shown to include an enlarged housing or receptacle **12** mounted upon a set of wheels **14** for ease in movement during use.

A triangular shaped tray **16** is mounted within one corner of the main housing **12** and defines a compartment **18** for supporting various operating and control components of the apparatus, separate and apart from the main compartment **20** of the housing **12** in which cleaning foam is generated.

A downwardly sloping bottom wall **24** in the main housing **12**, forms a sump at one end in which a quantity

25 of cleaning solution is placed. As is well known to those skilled in the art, a set of beaters **26** driven by a motor **28** meets this liquid solution to generate a large quantity of foam **22** which may be readily utilized from the top of the main housing **12**. Of course, it will be recognized that the motor **28** and beaters **26** do not form a part of the present invention, and may therefore be varied at will to suit specific requirements.

Pivotally supported beneath the bottom of the tray **16**, is a float **30** which controls the operation of a switch **32** of a bell alarm unit **34** that is connected through a transformer **36** across a power supply line **38**. Whenever the level of the liquid **25** decreases beyond a predetermined point, the switch **32** is closed by the falling float **30** to cause energization of the bell alarm **34**, to signal the operator to replenish the cleaning solution.

The electrical circuit is supplied through a plug connector **40** and a main switch **42** which controls the supply of electrical energy to an electrical resistance heating element **44** mounted beneath the lower wall **24** of the liquid compartment. A thermostatic switch **46** is connected in series with the resistance element **44**, and is controlled by a temperature detector **48**, such as a bulb type thermostatic element immersed in the cleaning solution and which controls operation of the thermostatic switch **46**. Thus, whenever the temperature of the liquid **25** exceeds a predetermined level, as may be determined by the calibration of the bulb element **48** and its associated switch **46**, the switch **46** will open to deenergize the heating element **44** and to simultaneously deenergize a signal lamp **50** associated therewith which is visible from beneath the main container or housing **12**.

Thus, in actual use, it will be recognized that with the connector **40** connected to a suitable source of electrical energy, such as a wall outlet, and with the main switch **42** in circuit closing relationship with the supply line **38**, the electrical heating element **44** will heat the solution **25** to a proper operating temperature, after which it will be automatically deenergized by the opening of the switch **46**. As the foam solution is used, it will be maintained at the proper temperature by the automatic opening and closing of the switch **46**. In the event that the solution falls below the predetermined level, the float operated switch **32** will close the circuit through the bell signal **34**, to provide an audible signal to the operator who will replenish the liquid, and after which the switch **32** will reopen by the elevated position of the float member **30**.

It will now also be recognized that the operation of the control system is completely independent of the beater motor **28** and any associated parts of the equipment. The operator is also able to determine when the heater element **44** is energized, by the visible signal lamp **50** which is energized whenever the heating element **44** is energized.

Thus, an effective and efficient control system is provided for maximum effectiveness and production of foam cleaning solution and generation of the foam for cleaning purposes.

While this invention has been described with particular reference to the construction shown in the drawing, it is to be understood that such is not to be construed as imparting limitations upon the invention, which is best defined by the claims appended hereto.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a cleaning foam generating machine having a well, a cleaning solution in said well, motor operated means in said well for producing a cleaning foam by

agitation of said solution, electrical heating means under said well for heating said solution, thermostatic switch means connected in series circuit relationship with heating means for maintaining said solution at a temperature for optimum foam production, float controlled means mounted in said well, and alarm means connected with said float controlled means to indicate drop in solution level by a predetermined amount.

2. The foam generating machine of claim 1, wherein the alarm means is an audible signal device.

3. The foam generating machine of claim 1, including visual signal electrically connected in series with said heating means to indicate energization of said heating means.

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