March 24. 1970 A. B. CAMPBELL 3,502,247

LATHER PRODUCING MACHINE

Filed May 29, 1968

Fig. 1

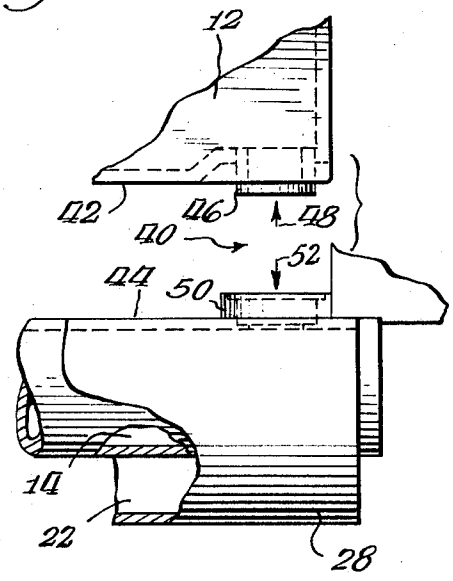


Fig. 2

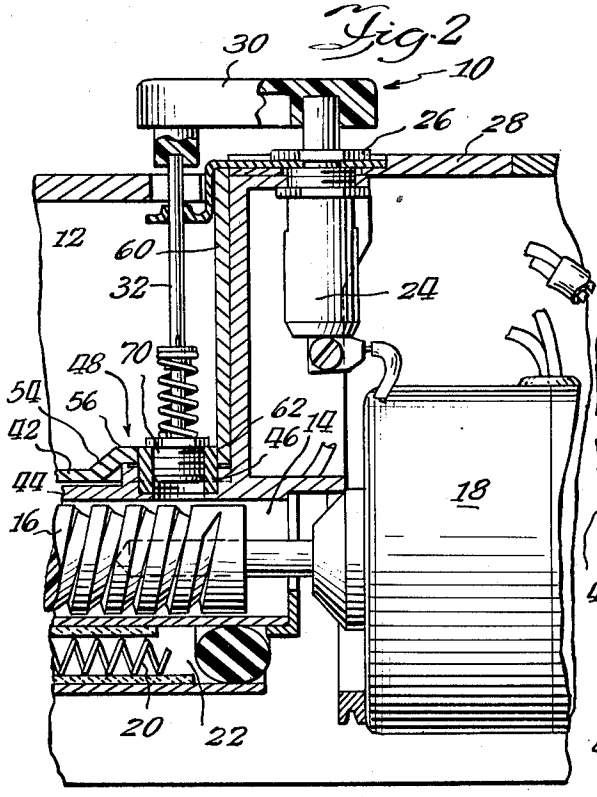
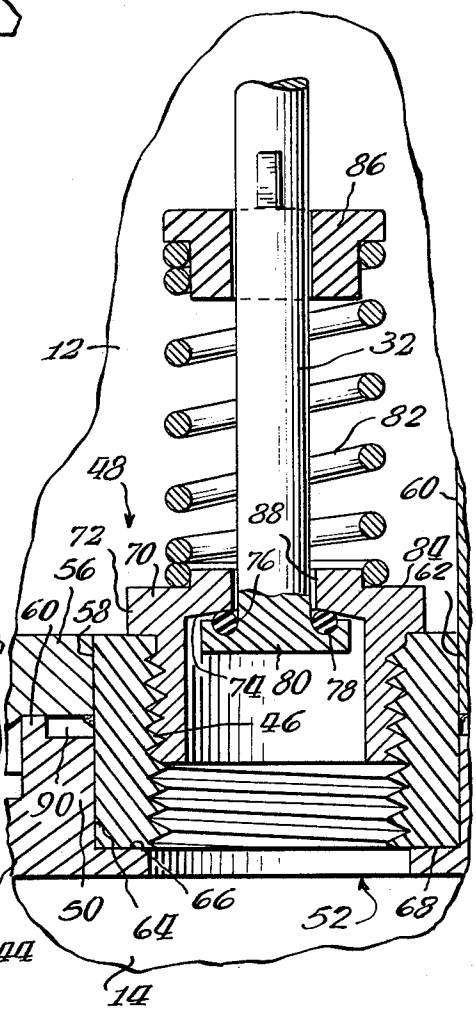


Fig. 3



INVENTOR

Albert B. Campbell

By Merriam, Marshall, Shapiro & Klose

ATTORNEYS

United States Patent Office 3,502,247
Patented Mar. 24, 1970

3,502,247

LATHER PRODUCING MACHINE

Albert B. Campbell, Glen Ellyn, Ill., assignor to Royal Products Company, Bensenville, Ill., a corporation of Illinois

Filed May 29, 1968, Ser. No. 732,955
Int. Cl. B67d 5/58
U.S. Cl. 222—190 6 Claims

ABSTRACT OF THE DISCLOSURE

An improved sealing connection for lather machines between the bottom wall of a detachable liquid soap reservoir and the top wall of the whipping chamber. An internally threaded sleeve projects from the reservoir into a boss extending from the whipping chamber to a point near the entrance of the whipping chamber. An improved liquid soap valve threadably engages the sleeve.

This invention relates to lather machines and in particular to lather machines having a liquid soap reservoir separate and detachable from a whipping chamber.

In the conventional type of lather machine currently in use, liquid soap is stored in a reservoir which is a separate, detachable unit located immediately above a whipping chamber within which the lather is formed. A passageway interconnects the two units and suitable liquid valve means are provided in the passageway to secure the two units and control the flow of liquid soap between the upper reservoir unit and the lower whipping chamber. In the continuous use of such machines, there is often found to be an annoying, persistent, and sometimes costly leakage of the liquid soap under the valve and the O-ring seal used between the bottom wall of the reservoir and the top wall of the whipping chamber. With some machines the leakage is minimal and merely requires attention during normal maintenance, whereas with others, the leakage is excessive. In the machines having excessive leakage, the problem becomes severe and requires a complete shutdown of the machine and a thorough cleaning of not only the space between the bottom reservoir wall and the top wall of the whipping chamber, but also of the dried liquid soap which has continuously oozed out onto the rest of the machine and onto the working area where the machine is located. Furthermore, the leakage in the seal between the two units is rarely correctable. This requires the operator either to continuously service the leaking machine or to purchase a new machine with the hope that the leakage of the new machine will be minimal.

In accordance with the principles of the present invention, there is provided a more reliable seal between the bottom wall of a separate liquid reservoir and the top wall of the whipping chamber. Specifically, in the improved sealing connection of the present invention, an internally threaded sleeve or nipple projects slightly from the liquid soap outlet of the reservoir into detachable snug-fit engagement in a recess in a boss extending upwardly from the top wall of the whipping chamber. The present improved sealing connection prevents the liquid soap from seeping under the valve means and into the space between the reservoir and whipping chamber by utilizing the projecting sleeve and recess to effectively seal such space. In fact, the present invention provides the improved sealing connection without the use of any type of O-ring seal between the reservoir and whipping chamber since any liquid soap which by chance would seep under the valve means would merely be conducted directly into the whipping chamber.

The invention will be better understood from the following detailed description thereof taken in conjunction with the accompanying drawings in which:

FIGURE 1 is a fragmentary elevational view of a lather machine illustrating the upper liquid reservoir and the lower whipping chamber with the improved sealing connection therebetween constructed in accordance with the principles of the present invention;

FIGURE 2 is a sectional view of the lather machine having the improved sealing connection of the present invention; and

FIGURE 3 is an enlarged view of the sealing connection and also illustrating an improved valve seal.

Referring to FIGURES 1 and 2, the lather machine **10** is of the parallel, direct delivery type in which liquid soap contained in a detachable upper liquid soap reservoir **12** is controllably released into a whipping chamber **14** for being whipped into lather by means of a whipping screw **16** rapidly rotated by a motor **18**. A series of heating elements **20** in a heating chamber **22** heat the liquid soap in reservoir **12**. For convenience of illustration, the whipping screw and heating elements are not shown in FIGure 1, but are shown in the sectional view of FIGURE 2. A motor switch **24** is mounted by suitable mounting means **26** to the lather machine housing **28**. Actuation of a liquid soap valve in the soap reservoir is obtained by depressing an actuator **30** which operatively engages the valve stem **32**. As can be seen from FIGURE 2, the actuator **30** also operates the motor switch **24**, with the actuating sequence arranged so that the motor **18** is operated shortly before the soap valve is operated.

Referring to FIGURE 1, the present invention is concerned with providing an improved sealing connection **40** between the reservoir bottom wall **42** and the top wall **44** of the whipping chamber. The sealing connection **40** includes a sleeve or nipple **46** depending downwardly from the bottom wall **42** at the liquid soap outlet **48**; and an upraised boss **50** extending upwardly from the top wall **44** of the whipping chamber at the liquid soap inlet port **52**.

The detailed construction of the improved sealing connection **40** can be more readily seen by referring to the sectional views of FIGURES 2 and 3. At the liquid soap outlet **48**, the reservoir bottom wall **42** includes a ramp portion **54** extending at an angle to the bottom wall and ending in a flat portion **56** which is parallel to the bottom wall **42**. The sleeve or nipple **46** is secured by brazing, or by any other suitable securing technique, the upper cylindrical outer surface **58** of the sleeve **46** to the flat portion **56** around substantially the entire surface **58** except for a small portion thereof which is secured to the side wall **60** at a small portion **62** thereof.

The boss **50** extending upwardly from the top wall **44** of the whipping chamber **14**, can be formed by securing a separate member to the top wall **44** or can be formed as an extrusion of the top wall **44**. It may be noted from FIGURES 2 and 3 that the top **60** of the boss **50** butts against the bottom of the flat portion **56** of the reservoir bottom wall. The boss **50** includes a cylindrical recess **64** which extends into the boss to form a shoulder **66** for receiving the sleeve or nipple **46**. As can be seen from FIGURES 2 and 3, when the liquid soap reservoir **12** is mounted in position in the lather machine **10**, the sleeve **46** projects into the recess **64** in the boss **50** until the bottom edge **68** of the sleeve butts against the shoulder **66**. The inner diameter of cylindrical recess **64** is approximately five thousandths of an inch larger than the outer diameter of the sleeve **46** so as to assure a snug fit engagement between the sleeve and the boss. Thus, the separate, detachable liquid soap reservoir **12** can be readily removed from the lather machine **10** when required for normal maintenance.

FIGURE 3 illustrates the passageway for the liquid soap which passes through the hollow, threaded interior of the boss **46**, with the boss **46** extending slightly below the top surface of the top wall **44** of the whipping chamber. To complete the sealing connection, the externally threaded valve seat member **70** threadably engages the boss **46**. The member **70** includes a flange **72** for securing the member to the sleeve. Within the interior portion of the valve member **70** there is included an angled interior ceiling **74** which cooperates with an O-ring seal **76** disengageably mounted in a recess **78** at the end **80** of valve stem **32**. The valve is maintained in sealing engagement, with the O-ring **76** firmly against the ceiling **74**, by means of a spring **82** having one end engaged on the top **84** of the flange **72** and the other end maintained in position by a stop member **86** mounted on the valve stem. As shown in FIGURE 3, the valve stem **32** slidably operates through an opening **88** in the valve member **70**, with the opening **88** being sealed by the O-ring seal **76**. It is especially to be noted that the O-ring seal **76** can be readily replaced by removing stop member **86** and valve seat member **70** so as to obtain access to valve stem end **80**. O-ring **76** can then be slipped off of the valve stem **32** and a new O-ring readily placed in position in recess **78**. Alternatively, a suitable resilient coating of resin material can be provided on a sloping top of a valve stem end **80**. The sloping top would match the surface of the ceiling **74**, so that better control of the flow of liquid soap might be obtained and the O-ring seal could be eliminated.

It is also to be particularly noted that no O-ring seal is required in the sealing connection between the liquid soap reservoir and the whipping chamber. In normal operation, when the actuator **30** is depressed to release the seal **76** from ceiling **74** the liquid soap in the reservoir flows through the opening **88**, through the hollow valve member **70**, and through the passageways in sleeve **46** and boss **50** into the whipping chamber **14**. The space between the bottom wall **42** and the top wall **44** is sealed by the snug-fit engagement of the sleeve **46** in the recess **64** of the boss **50**. If desired, an O-ring seal can be placed in a circular cavity **90** at the top of the boss **50**, although such a seal is not normally required to maintain an adequate sealing connection betwen the reservoir and whipping chamber. Any liquid soap which may find its way under the flange **72** of the valve seat member **70** is merely transported along the threads inside the sleeve **46** and is eventually directed to the bottom **68** of the sleeve which is immediately adjacent the liquid soap inlet **52** of the whipping chamber **14**. Thus, a reliable sealing connection is conveniently provided between the bottom of the soap reservoir and the top wall of the whipping chamber.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, as modifications will be obvious to those skilled in the art.

What is claimed is:

1. In a lather machine having a separable liquid soap reservoir and whipping chamber, the whipping chamber being enclosed by top, bottom and side walls thereof and having a lather outlet at one end and a liquid soap inlet port in said top wall at the other end of said chamber, the liquid soap reservoir defined by top, bottom and side walls thereof and having a liquid soap outlet in said bottom wall aligned with said liquid soap inlet port, an improved sealing connection between said liquid soap outlet and inlet, the improvement comprising:

a hollow, cylindrical boss extending upwardly from said whipping chamber top wall at said liquid soap inlet, said boss having an inner diameter forming a passageway communicating with said liquid soap inlet to said whipping chamber and a shoulder within said passageway defined by a cylindrical recess in said boss:

an internally threaded cylindrical nipple depending from said reservoir bottom wall and having one end secured to said reservoir bottom wall at said liquid soap outlet for communicating with said passageway, said nipple in detachable snug fit engagement in the recess in said boss with the other end of said nipple bottomed on said shoulder; and

valve means for controlling the flow of liquid soap between said reservoir and said whipping chamber, said valve means including an externally threaded valve seat member threadably engaging said nipple and having a flange on the upper portion of said member for securing said member to said nipple.

2. The improvement of claim **1**, wherein said shoulder is immediately adjacent the junction between said whipping chamber and said liquid soap inlet thereto so that liquid soap in said passageway is directed to the end of said nipple at the entrance to the whipping chamber.

3. The improvement of claim **1**, wherein said reservoir bottom wall includes a raised portion at said liquid soap outlet mounted on the top of said boss, and wherein said nipple is secured to said raised portion and projects into said boss to said shoulder for sealing the junction between the top of said boss and said reservoir bottom wall raised portion.

4. The improvement of claim **3**, including a cavity in the top of said boss, and sealing means in said cavity for sealing said boss, said reservoir bottom wall raised portion, and said nipple.

5. The improvement of claim **1**, wherein said valve seat member includes a valve seat ceiling in the inner portion thereof communicating with said passageway, and wherein said valve means includes a valve stem slidably engaging said valve seat member, a ledge at one end of said valve stem within said member, and an O-ring detachably mounted at the junction between said ledge and said valve stem and sealably engaging said valve seat ceiling.

6. The improvement of claim **5**, including a recess at said junction between said ledge and said valve stem, said O-ring seal detachably mounted within said recess.

References Cited

UNITED STATES PATENTS

2,871,058	1/1959	Puglia	222—190 X
2,925,202	2/1960	Stevens	222—190

SAMUEL F. COLEMAN, Primary Examiner

H. S. LANE, Assistant Examiner

U.S. Cl. X.R.

222—325, 510