United States Patent [19]

Hautly et al.

[11] **3,783,820**

[45] **Jan. 8, 1974**

[54] **POPCORN FLAVORING AND DISPENSING APPARATUS**

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[73] Assignee: **Buttermist, Inc.**, Bismarck, Mo.

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[21] Appl. No.: **240,592**

[52] **U.S. Cl.** **118/19**, 118/24, 99/238.1

[51] **Int. Cl.** **A23g 3/26**

[58] **Field of Search** 118/19, 24, 25, 303; 99/323.5, 238.1

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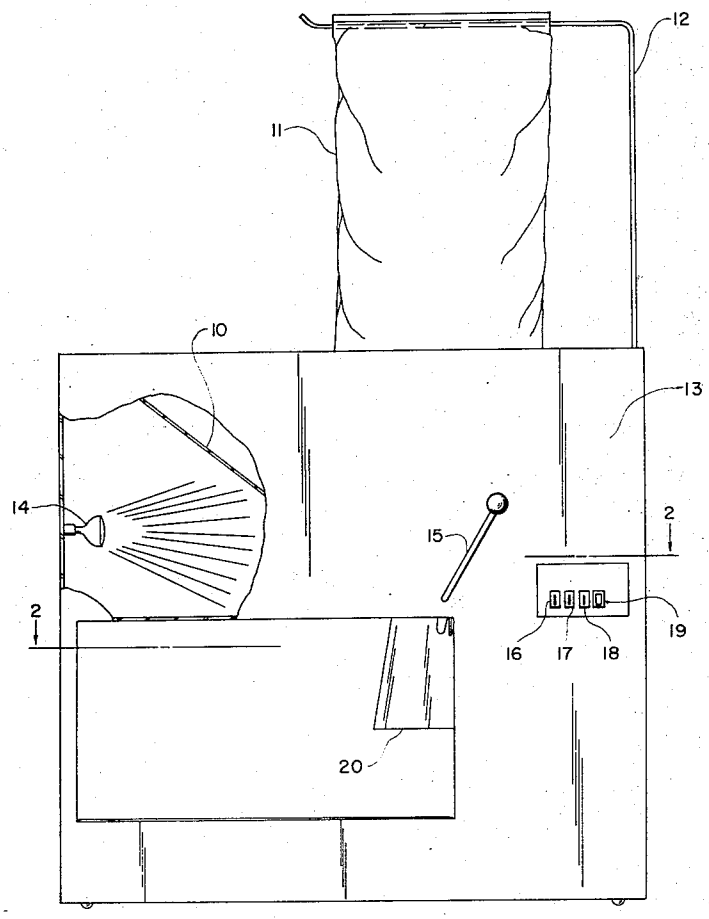
Primary Examiner—Louis K. Rimrodt

Attorney—Donald E. Gillihan

[57] **ABSTRACT**

A popcorn flavoring and dispensing apparatus, comprising a hopper for popped popcorn, an opening in the bottom of the hopper, a valve in the opening to control dispensing of popcorn through the opening, and a spray nozzle closely adjacent the opening to spray liquid butter or other flavoring uniformly and positively onto the popped popcorn as it is dispensed through the opening.

10 Claims, 11 Drawing Figures



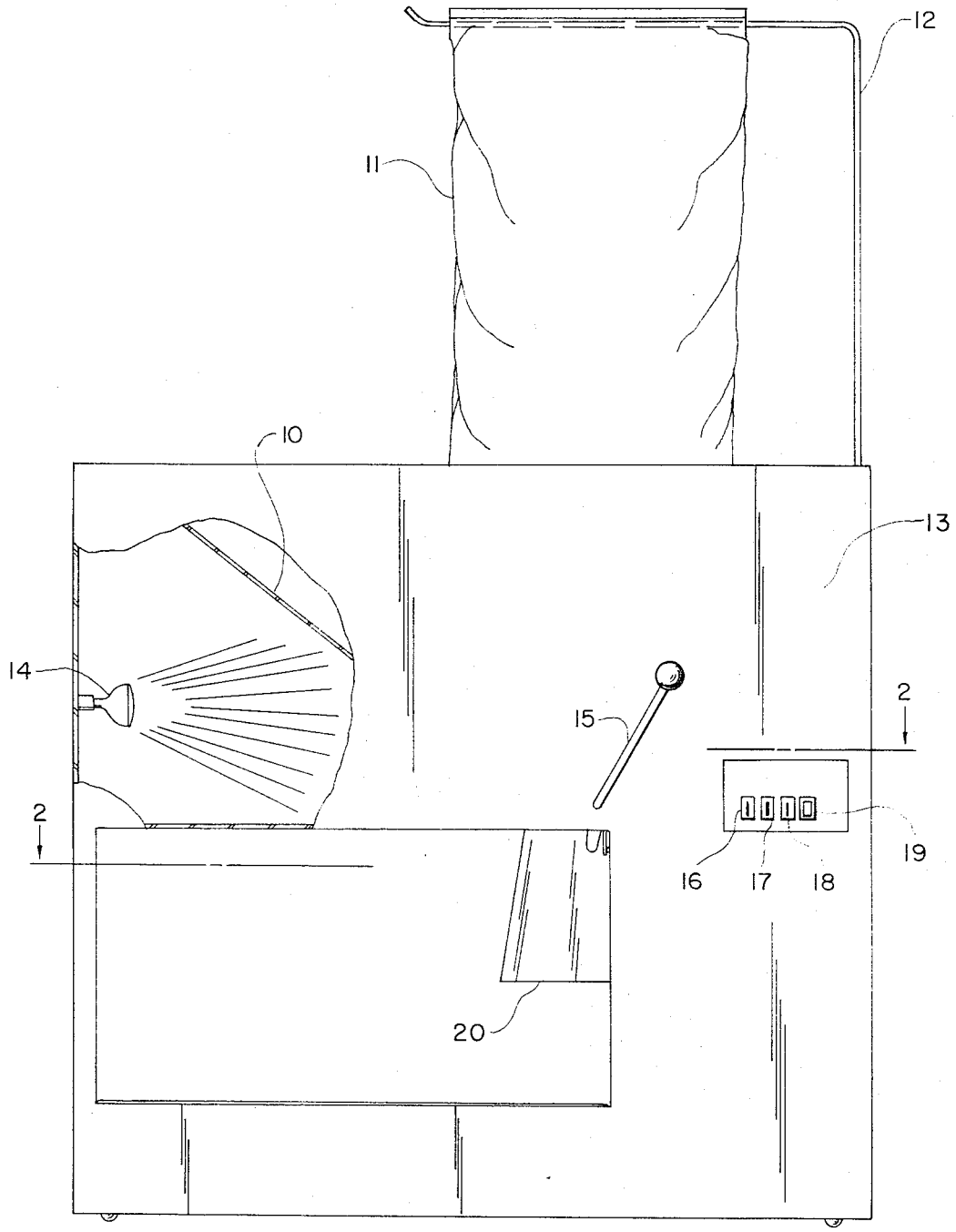


FIG. 1

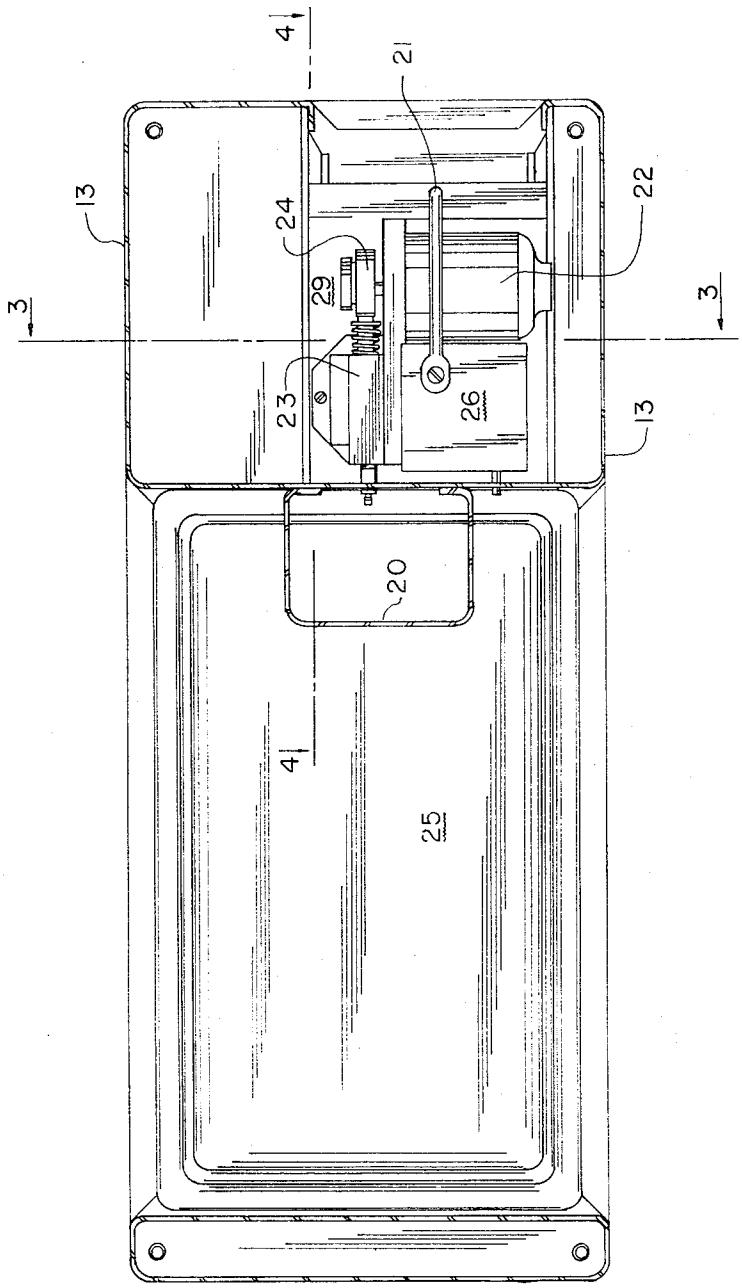


FIG. 2

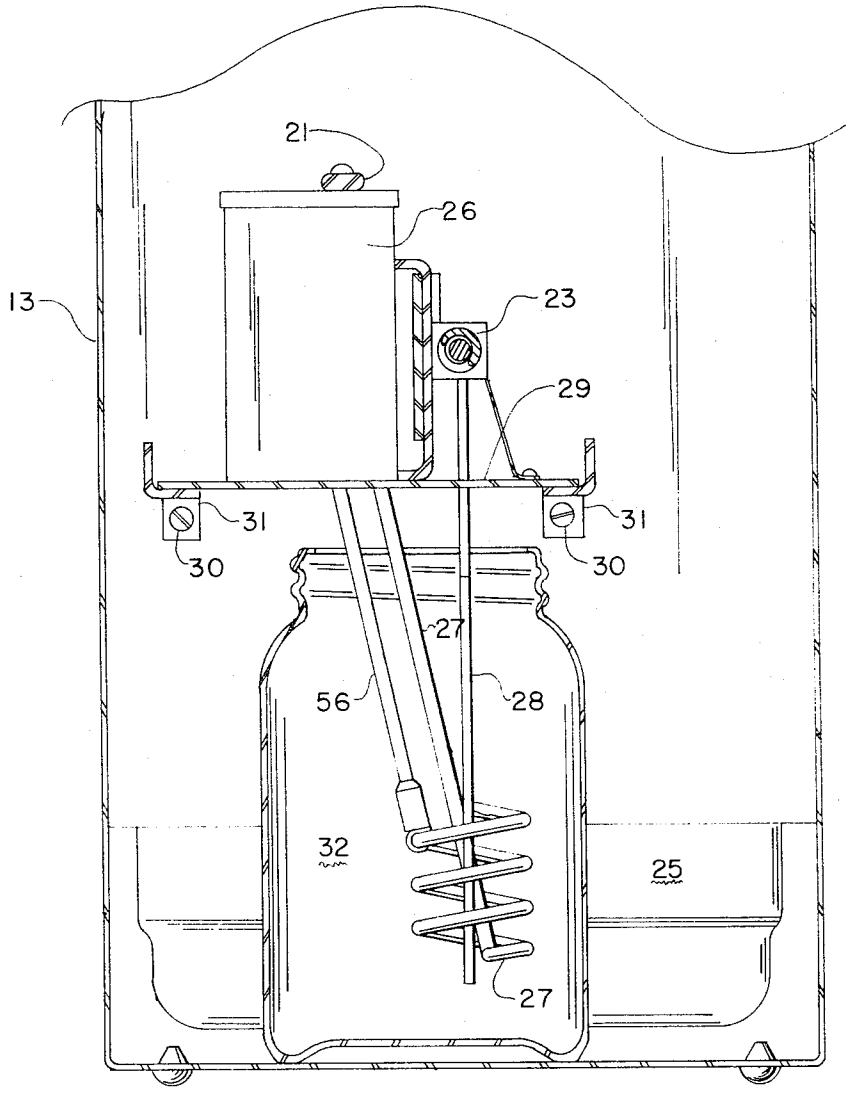


FIG. 3

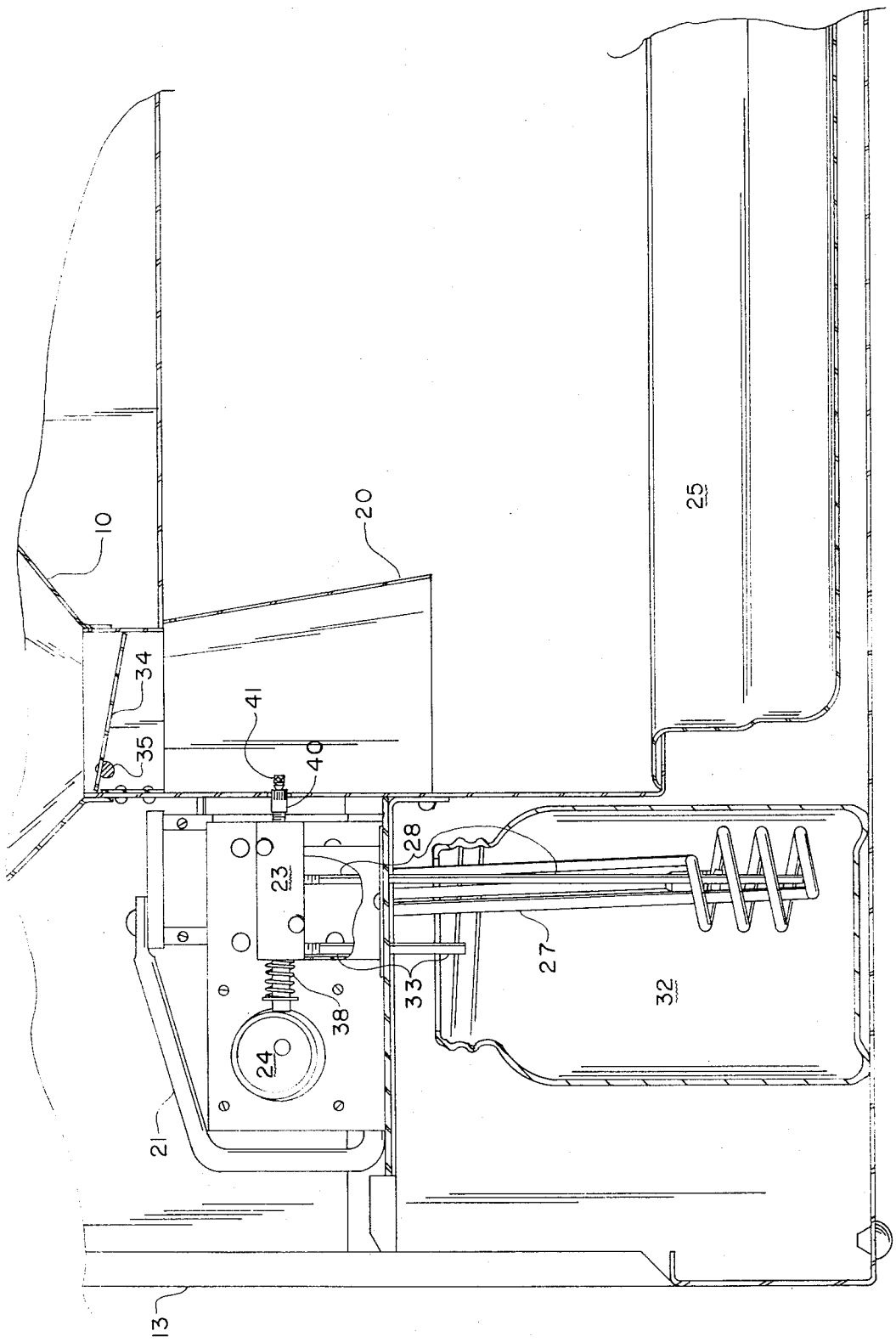


FIG. 4

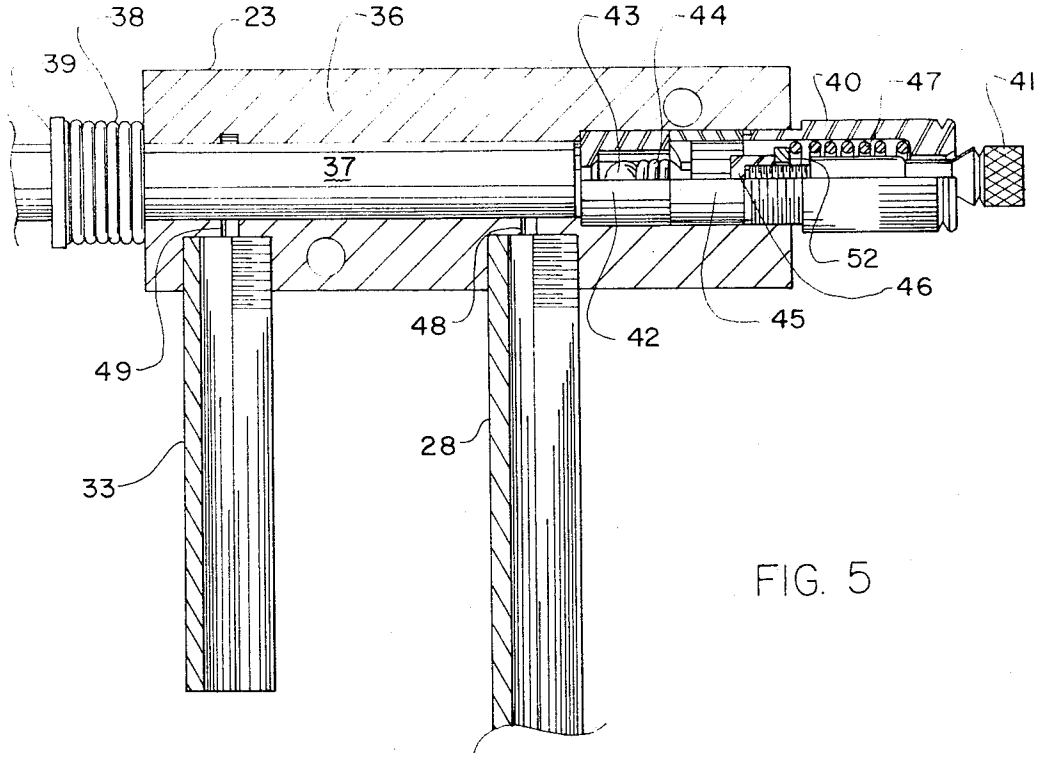

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FIG. 5

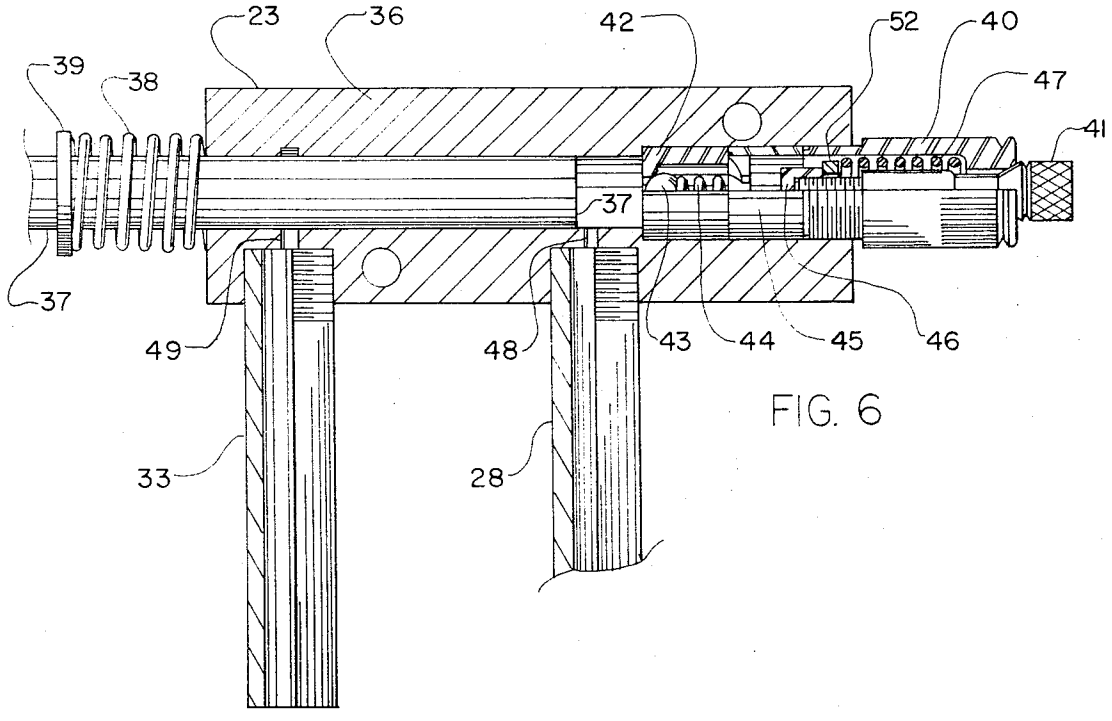

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FIG. 6

FIG. 7

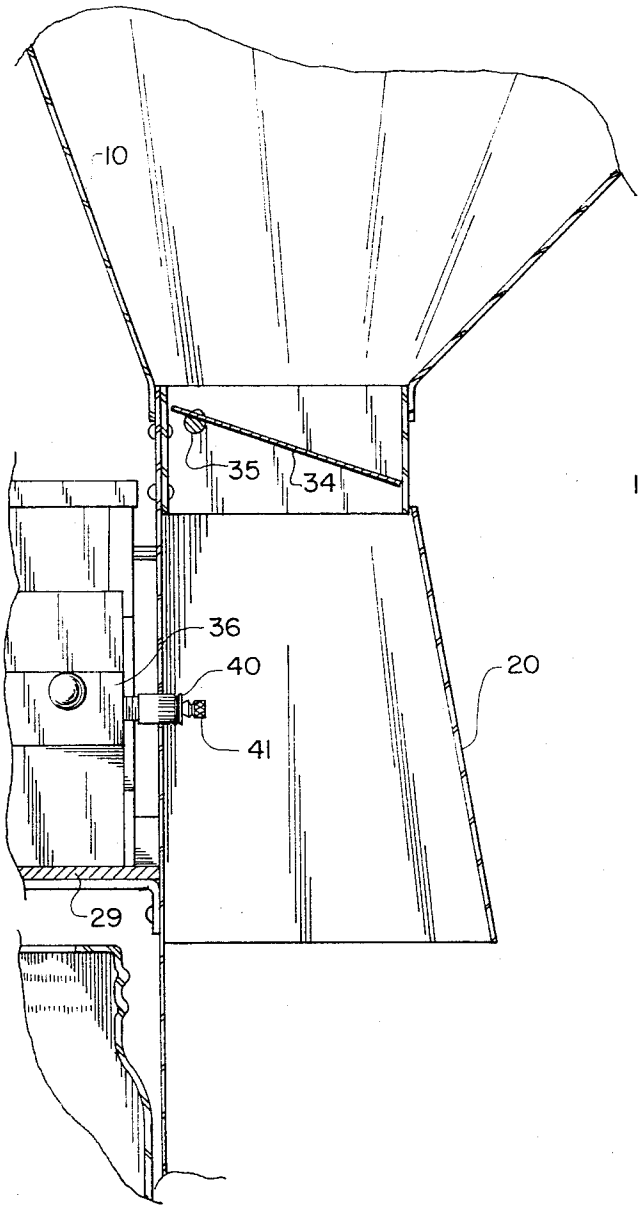


FIG. 8

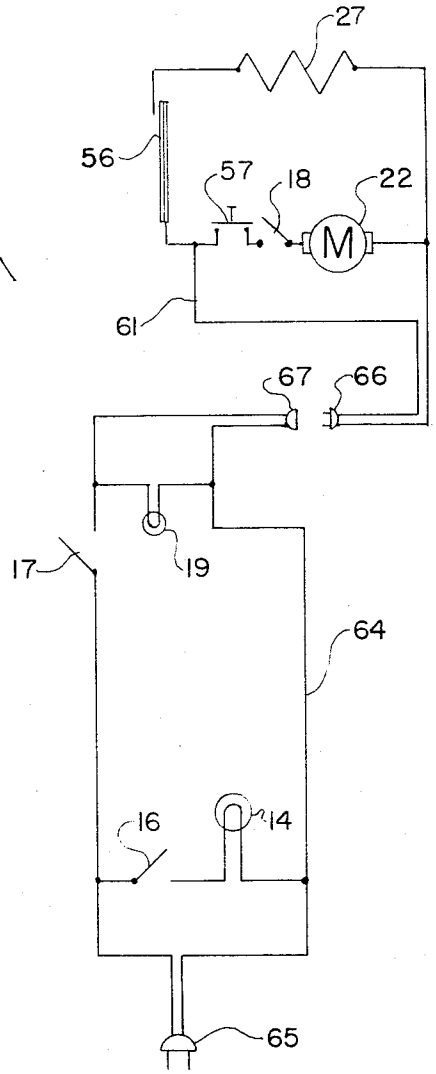


FIG. 9

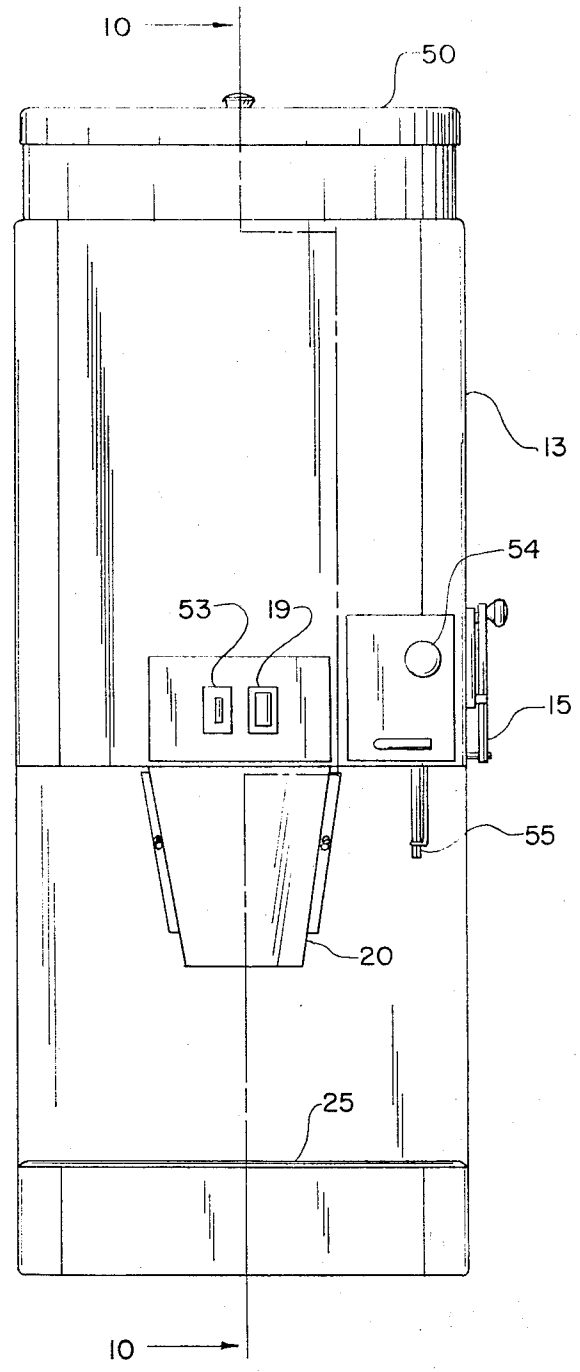


FIG. 10

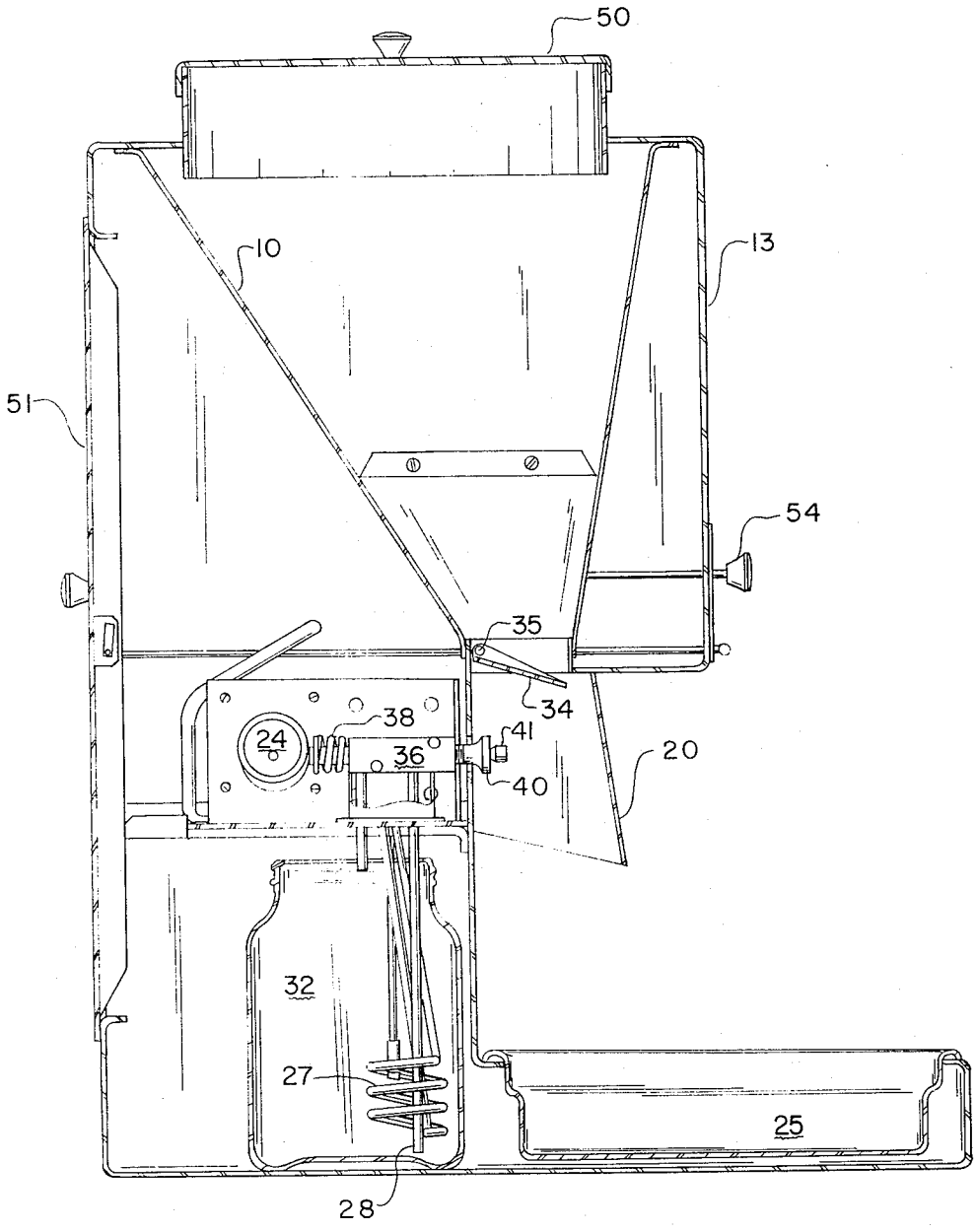
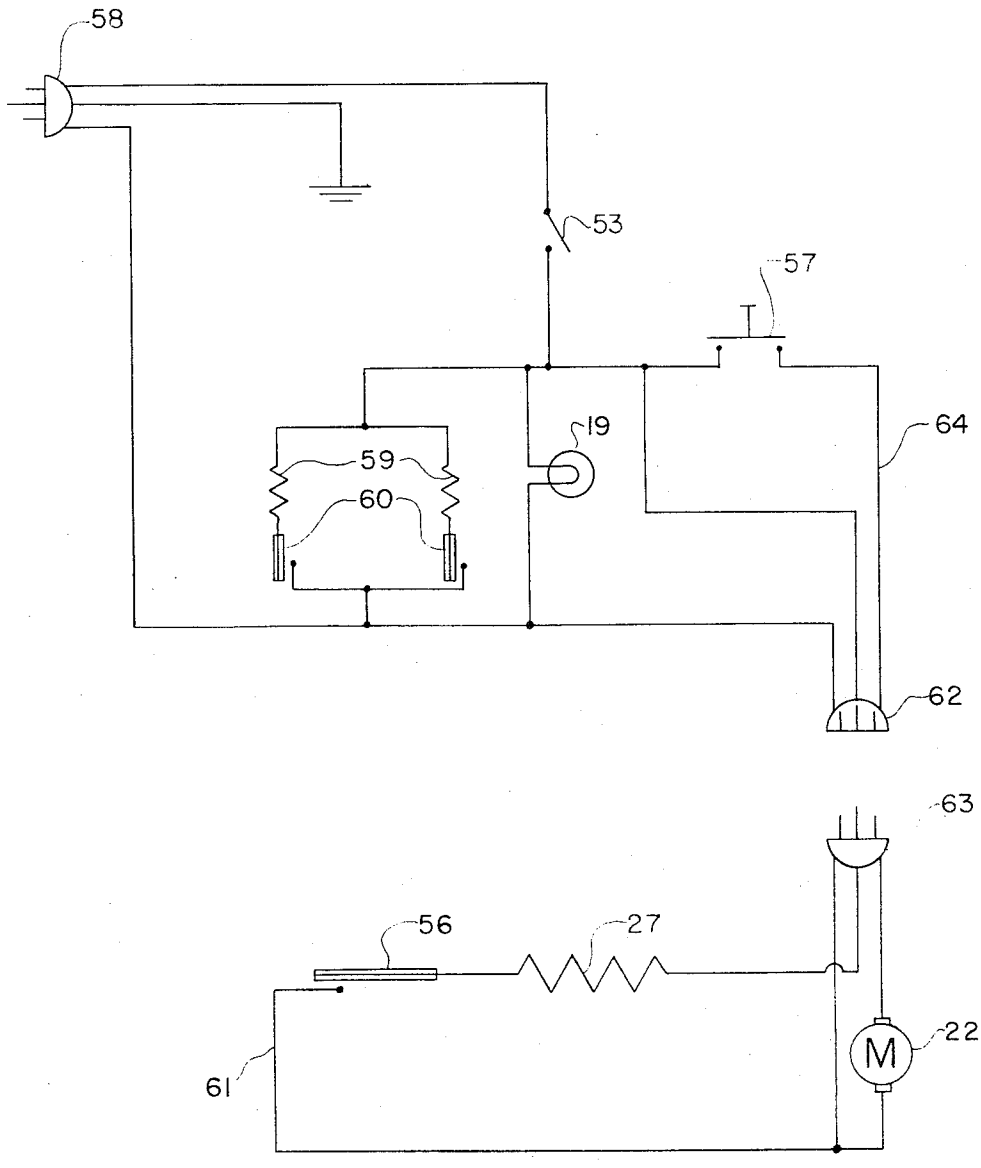


FIG. 11



POPCORN FLAVORING AND DISPENSING APPARATUS

BACKGROUND OF INVENTION

This invention relates to a popcorn buttering apparatus and in particular, a light weight portable apparatus suitable for use for buttering popcorn at point of sale locations such as theatres to popcorn which has previously been popped at some central warehouse location. Heretofore, concession stands at theatres and other places of public entertainment have used individual oil-type, batch process popcorn popping machines such as is disclosed by U.S. Pat. No. 3,120,169. Using such apparatus at point of sale locations, requires the employment of an operator, whose principal duty is to operate the machine. Furthermore, production, even with the use of a full-time operator, is limited by the size and capacity of the machine and sales are often missed while a new batch is being popped. Furthermore, the product produced is usually not of uniform quality. Many concessioniers now use pre-popped popcorn in which the popcorn is pre-popped at a central location with large air-type continuous flow-type corn popper, such as that disclosed by U.S. Pat. No. 3,315,989 issued to D. P. Smith. The product is then hermetically sealed and sold to concessioniers in large plastic bags. This practice guarantees an unlimited supply of popcorn of uniform quality when needed. The concessioniers merely heat the popcorn at the point of sale.

An additional change is made for buttered popcorn, and it is obtained by ladling molten butter to individual bags or boxes of popped popcorn at the time of sale. Popcorn in this manner is necessarily not uniformly coated with butter; thus the top part or portion of the bag or box is laden with molten butter while the other part or portion of the bag or box is completely without butter. Further, this practice often results in the consumer getting his fingers throughly coated with butter. Pre-popped popcorn can at the time of its popping at the central location be buttered; but such a product deteriorates rapidly in quality and taste, and moreover, many people prefer unbuttered popcorn. Therefore, dealers in popped popcorn sold to theatres and other places of public entertainment almost always sell the product in an unbuttered condition.

SUMMARY OF INVENTION

A principal object of the present invention is to provide an apparatus which will uniformly butter pre-popped popcron at point of sale locations.

Another object of this invention is to provide a light weight portable apparatus for use at point of sale locations which will impart a butter taste uniformly to pre-popped popcorn.

Still another object of the invention is to provide a high capacity apparatus for buttering pre-popped popcorn.

Still another object of the invention is to provide a simple, easily operated popcorn buttering apparatus at point of sale locations, which does not require special skill to operate.

Still another object of the invention is to provide an apparatus which will uniformly impart to pre-popped popcorn, the flavor and taste of buttered popcorn without the product being excessively oily and buttery to the touch.

In accordance with an important aspect with the present invention, the foregoing objects and others are achieved by the use of a high pressure, molten butter or butter oils, pump dispensing apparatus. Specifically, we have found that at a pressure of approximately 400 pounds per square inch, molten butter or butter oils at a temperature of approximately 160° Fahrenheit, can be applied to popcorn so that the butter actually penetrates the popcorn to obtain a uniform product of good taste, but which is not excessively oily to the touch.

The apparatus of our invention consists of a device on which large plastic bags of pre-popped popcorn can be placed. The bag is opened at the bottom to allow the contents thereof to be fed by gravity into a hopper. There the product is warmed by the use of a heating lamp or other suitable heat imparting device. The heated popcorn then by gravity feeds into an outlet where the operator of the apparatus may dispense the hot pre-popped popcorn in an unbuttered or buttered condition.

In the disclosed illustrative embodiments of the apparatus of our invention, the high pressure device for imparting the butter to the heated pre-popped popcorn is a positive pressure pump device in the nature of a check valve. In this manner, measured amounts of pre-heated butter or butter oil is applied to a measured amount of heated pre-popped popcorn at pressures of approximately 400 pounds per square inch at the point and time of sale to obtain a uniform, good tasting buttered product which is not excessively oily to the touch.

The novel features which are believed to be characteristic of this invention, both as to its organization and method of operation, together with further objects and advantages thereof, will be better understood from the following description considered in connection with the accompanying drawings in which illustrative systems embodying the principles of the invention is illustrated by way of example. It is to be expressly understood, however, that the drawings are for the purpose of illustration and description only, and are not intended as a definition of the limits of the invention.

DESCRIPTION OF DRAWING

In the drawings:

FIG. 1 is a front elevation view of one embodiment of this invention partially cut away showing a heating element and showing a bag of pre-popped corn in place.

FIG. 2 is a sectional view taken substantially along line 2—2 of FIG. 1 as viewed in the directions indicated by the arrows.

FIG. 3 is a partial sectional of view taken substantially along line 3—3 of FIG. 2 as viewed in the directions indicated by the arrows.

FIG. 4 is a partial sectional view taken substantially along line 4—4 of FIG. 2 as viewed in the directions indicated by the arrows.

FIG. 5 is a sectional view of the pump mechanism illustrated in FIGS. 3 and 4 in a spraying position.

FIG. 6 is a sectional view of the pump mechanism in the closed position.

FIG. 7 is an enlarged view, partially in section, of pump nozzle, removable butter shield and gate as shown in FIG. 4.

FIG. 8 is a wiring diagram of the control circuitry for operating the apparatus.

FIG. 9 is a side elevation view of still another embodiment of this invention.

FIG. 10 is a sectional view taken substantially along line 10—10 of FIG. 9 as viewed in the direction indicated by the arrows.

FIG. 11 is a wiring diagram of the control circuitry for operating the embodiment of the invention shown in FIG. 9.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to the drawings, wherein like or corresponding parts are designated by similar reference characters throughout the several views, there is shown in FIG. 1 an apparatus to produce superior quality buttered popcorn at point of sale locations using prepopped popcorn. The apparatus is shown to include a hopper 10 gravity fed with prepopped popcorn from Bag 11 adjustably held in place by bag holder 12. The bag holder 12 is mounted on cabinet 13 which encloses hopper 10 and heating lamp 14. The heating lamp 14 will maintain the popped popcorn at a temperature in the range of 100° to 200° F. Handle 15 attached to pin 35 provides means to open gate 34 in the bottom of Hopper 10 to allow the heated pre-popped popcron to fall by gravity through a removable butter shield 20. Handle 15 also actuates the pump mechanism 23 when gate 34 is open. Switches 16, 17 and 18 are provided to operate the heating lamp 14, heating element power supply for heating element 27 and pump power supply for the pump mechanism 23, respectively. Indicator light 19 indicates that heating element 27 power supply is on. Thermostat 56 actuates the electrical supply to heating element 27. The heating element 27 preferably maintains the temperature of the butter or butter oil at about 160° F., but a range of from about 130° F. to about 190° F. is satisfactory.

FIG. 2 is a top sectional view which illustrates the compactness of the popcorn buttering apparatus as it fits into cabinet 13. Handle 21 is attached to platform 29 and heating element control housing 26. Motor 22 is mounted on platform 29 and is rotably attached to eccentric cam 24, which actuates the pump mechanism 23. A pan 25 is used by the operator to catch loose popcorn and to store boxed or bagged popcorn.

FIG. 3 is a side sectional view which also illustrates the compactness of the popcorn buttering apparatus. Platform 29 may be attached to the side walls of cabinet 13 by screws 30 through flange 31 or may be attached to legs so that the apparatus may be entirely removed from cabinet 13. Heating Element 27 is thermostatically controlled by thermostat 56 and fits into a jar 32 or other suitable container for butter or butter oil. It is preferred that the temperature of the butter or butter oil be maintained at 160° F. The butter or butter oil is introduced to the pump mechanism 23 by means of intake tube 28.

FIG. 4 is also a side sectional view which again illustrates the compactness of the popcorn buttering apparatus. At the bottom of the hopper 10, gate 34 is hingedly connected to pin 35 which in turn is rotably connected with lever 15. With the gate 34 in open position, the popcorn falls by gravity into the open bottomed removable butter shield 20, which prevents lateral movement. It is at this point that motor 22 of the pump mechanism 23, is activated by a lever, not shown, also rotably attached to pin 35, provided pump power supply switch 18 is in the on position. As the popped popcorn falls into the removable butter shield 20, a very fine spray or mist of the pre-heated butter or butter oil envelopes and impregnates each kernel of popped popcorn. A bypass tube 33 extends down from the pump mechanism 23, to return any butter to the butter or butter oil container. The pump mechanism 23 is driven by the eccentric cam 24 operating on the piston 37 with opposite force applied by piston spring 38.

FIG. 5 and FIG. 6 illustrate in detail the pump mechanism 23. It comprises a cylinder 36 into which is slideably positioned piston 37, bearing against the exterior of cylinder 36 is the piston spring 38 which surrounds piston 37 and also bears against piston snap ring 39. Intake tube 28 and bypass tube 33 extend downwardly from the pump mechanism 23 and are threaded into the cylinder 36 in communication with the intake port 48 and bypass port 49. Nozzle body 40 is threaded into the cylinder 36 and bears against spacer 45 which in turn bears against seat 42. A check ball 43 is provided within the seat 42. Bearing against the check ball 43 is a valve spring 44. Stem 41 is inserted into the end of the nozzle body 40 and stem nut 46 is threaded onto the enclosed portion of the stem 41. Stem nut 46 bears against spacer 52 which in turn bears against stem spring 47 which in turn bears against the interior of nozzle body 40.

FIG. 5 discloses the pump mechanism 23 in the open position. Butter and butter oil is forced by piston 37 in a positive manner around the check ball 43, thence around valve spring 44 to the stem nut 46. The butter or butter oil then forces it outward. The heated butter or butter oil in turn finds its way around the stem spring 47 and out of the opening between the nozzle body 40 and stem 41.

FIG. 6 shows the arrangements in the closed position. At this position, additional butter or butter oil is introduced into the cylinder 36 by means of intake port 48 and intake tube 28.

FIG. 7 is an enlarged detail sectional view of the popcorn buttering section of the apparatus of this invention. In this embodiment, the removable butter shield 20 is designed so that the bottom opening is slightly larger than the top part, near gate 34. The shield provides lateral containment for the kernels of popped popcorn while they are being enveloped and impregnated with butter or butter oil.

If buttered popcorn is not desired, the operator merely turns the pump power supply switch 18 to the off position.

FIG. 8 is a wiring diagram. Electrical power is supplied to the circuit through the male electrical plug 65. When the heating lamp switch 16 is closed, a circuit is completed through the heating lamp 14. Indicator light 19 lights to show that power is available to the removable circuit 61, when the heating element switch 17 is closed. By plugging the male plug of the removable circuit 66 into the female plug of the stationary circuit 67, a circuit is available to the heating element 27 when the heating element thermostat 56 and the heating element switch 17 are both closed. When the removable circuit 61 and the stationary circuit 64 are connected, and switch 17 is closed, power is available to the motor 22 if the pump switch 18 and the push-button switch 57 are both closed.

The push-button switch 57 is actuated by the rotation of push-button lever 55 when lever 15 is operated.

FIG. 9 and FIG. 10 are a front elevation view and a side sectional view, respectively of another embodiment of this invention. In this configuration, pre-popped popcorn is placed in hopper 10 covered by lid 50. Combination switch 53 activates the pump power supply, the heating element power supply to preheat the butter or butter oil, and also the heat source to preheat the kernels of pre-popped popcorn, which in this configuration is a thermal pad or blanket adhesively affixed to the walls of the hopper 10 instead of a heat lamp 14. The removable butter shield 20 in this embodiment is so shaped that its cross sectional area is more nearly equal from top to bottom.

FIG. 11 is a wiring diagram. Electrical power is supplied to the circuit via a 3-wire grounded receptacle 58. As the combination switch 53 is closed, a circuit is created through the indicator light 19. When the hopper resistance heaters thermostats 60 are closed, and at the same time the combination switch 53 is closed, a circuit is completed through the hopper heaters 59. By plugging the male 3-wire receptacle 63 into the female 3-wire receptacle 62 and when the heating element thermostat 56 is closed, a circuit is formed through the heating element 27. When the removable pump & butter heater circuit 61 is plugged into the stationary circuit 64 and the combination switch 53 is closed and when at the same time the push-button switch 57 is closed, a circuit is in evidence through the motor 22.

The push-button switch 57 is actuated by the rotation of push-button lever 55 when lever 15 is operated.

Thus, it may be seen that the apparatus described herein for producing superior quality buttered popcorn at point of sale locations from previously popped popcorn and the method therein embodied is a noteworthy improvement over prior art devices and methods employed for the same purpose. It is to be understood, however, that the above described arrangements are illustrative of the application of the principles of this invention. Numerous other arrangements within the scope of the invention may be devised by those skilled in the art without departing from the scope of the invention.

What is claimed is:

1. Popcorn flavoring and dispensing apparatus, comprising a hopper for storage of popped popcorn, said hopper having a dispensing opening in the bottom thereof for dispensing popcorn from said hopper, valve means in said opening, valve operating means connected with said valve means to operate said valve means for selectively controlling dispensing of popcorn through said opening, a container for liquid flavoring for said popcorn, liquid spraying means closely adjacent the dispensing opening and connected with the container to receive said flavoring therefrom, and means connected with the spraying means to operate the spraying means to spray said liquid flavoring uniformly onto said popcorn as the popcorn is dispensed through said opening.

2. Popcorn flavoring and dispensing apparatus as in claim 1, wherein heating means is closely adjacent said hopper for heating popped popcorn stored in said hopper.

3. A popcorn buttering apparatus as set forth in claim 2 wherein the means for maintaining the popped popcorn warm is a heat lamp.

4. Popcorn flavoring and dispensing apparatus as in claim 1, wherein said container for liquid flavoring is supported adjacent said hopper and a heating element is positioned within said container and said flavoring to maintain said butter in liquid form and to maintain the temperature of said liquid butter at a temperature of between 130° and 190° F.

5. Popcorn flavoring and dispensing apparatus as in claim 1, wherein said spraying means comprises a spray nozzle positioned beneath said dispensing opening in the path of popcorn falling through said opening and in a position to spray liquid flavoring in a direction substantially perpendicular to the axis of travel of the popcorn, pump means connected with the spray nozzle and conduit means connected with the container of liquid flavoring and with the pump means for conveying liquid flavoring to the pump means, said pump means operable to spray said liquid flavoring onto said popcorn under pressure.

6. Popcorn flavoring and dispensing apparatus as in claim 5, wherein a shield means is supported beneath said dispensing opening and opposite said spray nozzle for constraining the popcorn to move in a substantially verticle path and to confine said sprayed liquid flavoring to the area within said shield means.

7. Popcorn flavoring and dispensing apparatus as in claim 5, wherein said pump means comprises an elongate housing having a longitudinally extending bore therethrough, a piston slideably and sealably received in said bore, check valve means in said bore between said piston and said spray nozzle to prevent reverse flow of liquid flavoring from said spray nozzle into said bore, and means operably connected with said piston to reciprocate said piston in said bore to pump said liquid flavoring through said spray nozzle.

8. Popcorn flavoring and dispensing apparatus as in claim 7, wherein said means for reciprocating said piston comprises a cam means engaged with an end portion of the piston extended outwardly of the housing to forcibly push the piston toward the spray nozzle to dispense liquid flavoring from said bore through said nozzle, and spring means engaged between the extension and the end of the housing to return said piston in said bore and maintain it in engagement with said cam means.

9. Popcorn flavoring and dispensing apparatus as in claim 8, wherein electric motor means is connected with said cam means to rotate said cam means, said motor means connected in a circuit which is removably connected to a power source, and heating element means for said flavoring in said circuit with said motor means, said heating element means for said flavoring controlled by a thermostat connected in said circuit and disposed in the liquid flavoring in said container.

10. Popcorn flavoring and dispensing apparatus as in claim 8, wherein an externally accessible manually operable handle means is mounted on said apparatus and is operatively connected with a switch means to control energization of said motor means and said heating element means for said flavoring, said handle means also operatively connected with said valve means to operate said valve means so that upon operation of said handle means said popcorn is dispensed through said opening and said flavoring is sprayed onto dispensed popcorn.

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