

May 27, 1958

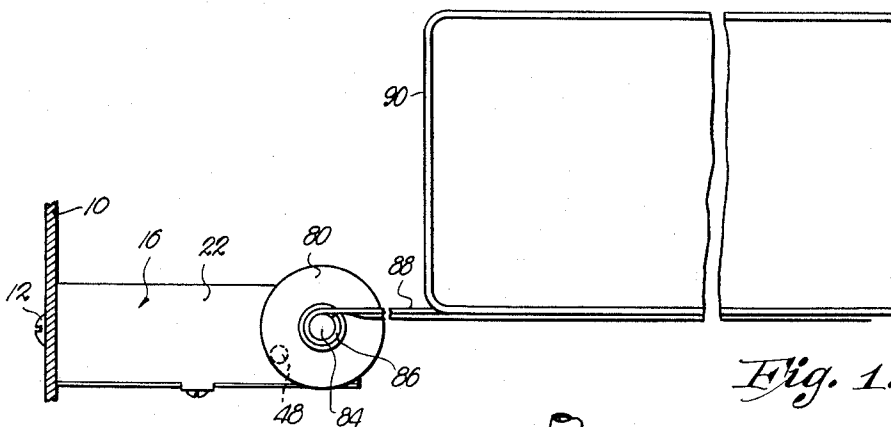
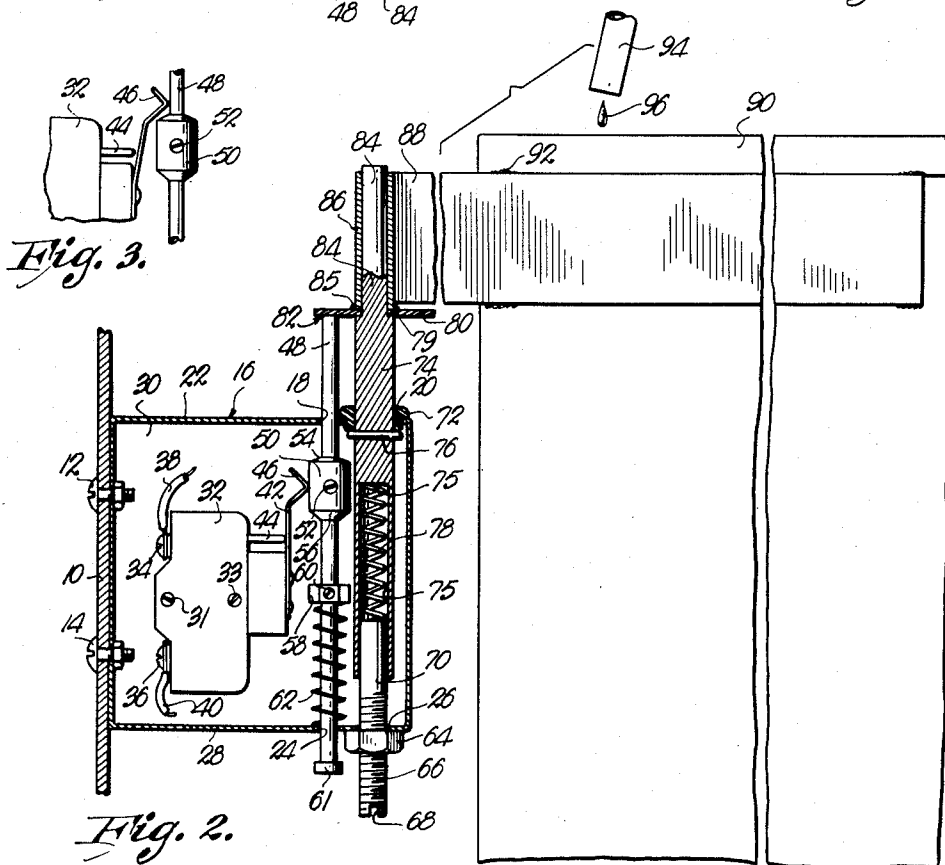
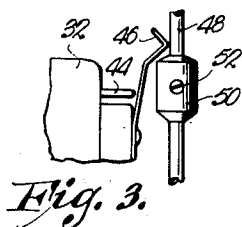
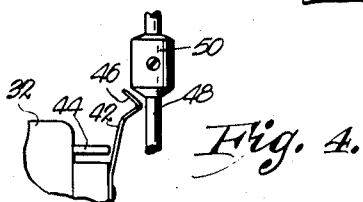
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2,836,672

SAFETY DEVICE FOR WASTE TANK

Filed April 18, 1956

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 5.

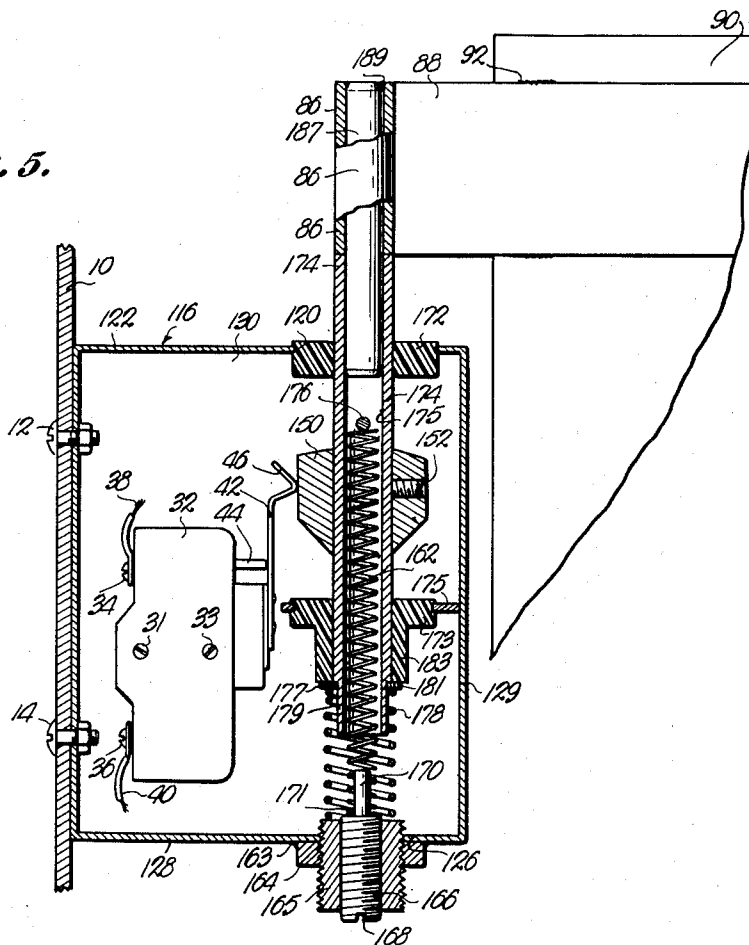
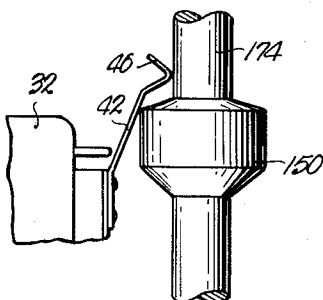


Fig. 6.

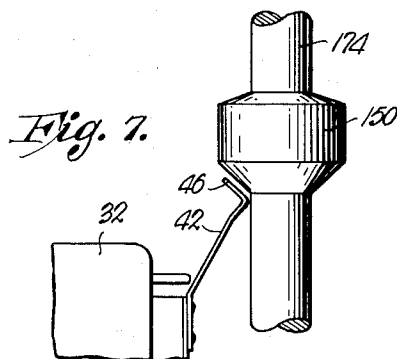


Fig. 7.

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SAFETY DEVICE FOR WASTE TANK

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Application April 18, 1956, Serial No. 578,997

18 Claims. (Cl. 200—85)

This invention relates to the field of control switching and, more particularly, to apparatus for opening and closing an electrical circuit responsive to the presence or absence and the magnitude of a weight.

Still more specifically, the invention contemplates means for automatically opening an electrical operating circuit of a bulk beverage vending machine when a waste tank is either absent from its operative position or filled to a given degree with waste material and for closing said circuit when the waste tank is in operative disposition but either empty or filled to less than such predetermined degree.

Although the apparatus of the invention could well find utility in other applications, it is especially adapted for use in bulk beverage vending machines wherein disposable containers are successively fed to a vending position and there filled with the beverage to be vended from an automatic spigot or the like. The need for means for draining waste liquids from the vending or filling location into a waste storage tank will be evident from the fact that a customer may inadvertently spill a portion of the beverage during removal from the vending machine or, where carbonated beverages are being vended, some excess of beverage may be delivered from the dispensing spigot which will spill over the container in which individual drinks are vended.

Heretofore, there has been no adequate means of assuring that a vending machine will be deactivated either when a waste tank is full or when a serviceman has forgotten to replace the waste tank in a machine after emptying the same.

Accordingly, it is the primary object of this invention to provide safety switching apparatus for accomplishing the above-mentioned functions.

It is another important object of this invention to provide such apparatus which is simple in nature, positive in action, inexpensive to manufacture and will require a minimum of maintenance during long continued use.

It is another important object of this invention to provide such apparatus including means for varying the predetermined weight of waste material required to operate the circuit opening switch.

It is another important object of this invention to provide such apparatus including an electrical switch for controlling the operating circuit of a vending machine or the like, a shiftably mounted element adapted for releasably carrying a waste tank thereon, yieldable means biasing the element to resist the weight of waste tank and waste material delivered to the latter, and structure on the element shiftably therewith for engaging parts of the switch to operate the latter when the element is in a certain positional disposition.

Still other important objects of this invention, including certain significant details of construction, will be made clear or become apparent as the following description of the invention progresses.

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In the accompanying drawings:

Fig. 1 is a fragmentary top plan view of a portion of one embodiment of a waste tank and control switching apparatus used in conjunction with the waste tank in accordance with this invention;

Fig. 2 is a fragmentary side elevational view of the waste tank and control switching apparatus of Fig. 1, with parts broken away and shown in section;

Fig. 3 is a fragmentary side elevational view of a portion of the switching apparatus of Fig. 1, showing the condition thereof when the waste tank is filled to a predetermined maximum level;

Fig. 4 is a fragmentary side elevational view showing said portion of the switching apparatus of Fig. 1, illustrating the condition thereof when the waste tank is removed;

Fig. 5 is a fragmentary side elevational view of a portion of a second embodiment of waste tank and control switching apparatus used in conjunction therewith in accordance with the invention;

Fig. 6 is a fragmentary, side elevational view of a portion of the switching apparatus of Fig. 5, showing the condition thereof when the waste tank is filled to a predetermined maximum level; and

Fig. 7 is a fragmentary, side elevational view showing said portion of the switching apparatus of Fig. 5 illustrating the condition thereof when the waste tank is removed.

Referring now to the accompanying drawings, and particularly the embodiment of the invention shown in Figs. 1-4 inclusive, the numeral 10 designates a side panel or the like of a vending machine or other structure to which is secured by fastening means 12 and 14 a housing 16 for the safety switching apparatus contemplated by this invention. Housing 16 may comprise a rectangular box of metal having a pair of openings 18 and 20 in the top wall 22 thereof and a pair of openings 24 and 26 respectively vertically aligned with openings 18 and 20 in the bottom wall 28 of box-like housing 16.

Housed within box 16 and secured to a side wall 30 thereof by any suitable means (31 and 33) is an electrical switch 32 having a pair of terminals 34 and 36 connected in an operating circuit of a vending machine or the like represented by a pair of conductors 38 and 40. Switch 32 also includes a swingable switch leaf 42 of resilient material normally disposed out of engagement with a spring biased switch operating plunger 44 but adapted for reciprocating the latter when swung to an operative position for operating the switch 32 to make an electrical connection between terminals 34 and 36 thereof. Leaf 42 is provided with a V-shaped cam engaging bend 46.

An elongated rod 48 extends vertically through openings 18 and 24 of housing 16 and is reciprocable within the latter. Rod 48 is provided with an elongated cam 50 within housing 16 and adjustably secured upon rod 48 by a set screw 52. Cam 50 is generally cylindrical but provided with an uppermost frusto-conical surface 54 and a lowermost frusto-conical surface 56. The rod 48 is provided below cam 50 with an adjustable stop sleeve 58 secured on rod 48 by a set screw 60. A coil spring 62 is disposed upon rod 48 between stop 58 and bottom wall 28 of housing 16, spring 62 bearing oppositely against wall 28 and stop 58 to yieldably bias the rod 48 upwardly. An outturned flange or stop 61 on the lower extremity of rod 48 below bottom wall 28 and of greater transverse dimension than the opening 24 limits the upward travel of the rod 48 under the biasing influence of spring 62.

As will be clear in Figs. 2, 3 and 4, rod 48 and cam 50 thereon are so disposed relative to switch 32 and

particularly bend 46 of leaf 42 thereof that, when the rod 48 and cam 50 are at either the uppermost or the lowermost limit of their path of travel, the cam 50 will be clearing bend 46. When the rod 48 and cam 50 are at an intermediate position as illustrated in Fig. 2. However, cam 50 will be engaging bend 46 of leaf 42 to swing the latter to an operative position reciprocating plunger 44 and operating switch 32 to make the electrical connection between terminals 34 and 36.

A nut 64 is secured to bottom wall 28 of housing 16 in alignment with opening 26 and threadably receives an adjusting screw 66 which passes through nut 64 and opening 26 and extends upwardly into housing 16. The lowermost end of screw 66 is provided with a tool receiving notch 68, while the uppermost portion thereof is smooth and unthreaded as at 70.

A low friction bearing grommet 72 of nylon or other suitable material is mounted in opening 20 of top wall 22 of housing 16 and receives for vertical reciprocation therethrough an elongated element 74 having a tubular or hollowed lower portion 75 which extends downwardly through the interior of housing 16 into telescoping relationship with the smooth portion 70 of adjusting screw 66. A pin 76 traverses the element 74 within housing 16 and a coil spring 78 is disposed within the hollowed portion 75 of element 74 and in oppositely abutting relationship against the upper extremity 77 of the cavity of portion 75 and the uppermost extremity of adjusting screw 66. The lowermost portion of element 74 is, of course, slidable upon the uppermost portion 70 of adjusting screw 66.

The upper portion of element 74 above housing 16 and bearing grommet 72 is shouldered as at 79 and terminates in an uppermost post portion 84 of reduced diameter above the shoulder 79.

The post 84 of element 74 removably receives a vertical sleeve portion 86 of a laterally extending arm 88 attached to an open top waste receiving tank 90 in any suitable fashion such as by welding at 92. An annular disc 80 is rigidly mounted on the lowermost extremity of sleeve 86 such as by welding as at 85, disc 80 extending laterally from the element 74 and sleeve 84 a distance sufficient to overlie the uppermost end of rod 48 and normally abut thereagainst as at 82.

A drain or waste discharge conduit forming a part of the vending machine or the like with which the apparatus of the invention is used, is shown in Fig. 2 and indicated by the numeral 94. Such waste delivery pipe 94 is obviously disposed to discharge waste liquid, as indicated at 96, into the tank 90 when the latter is in place with the sleeve 86 disposed upon the post 84 and the disc 80 resting upon the shoulder 79 of element 74. It will be observed that sleeve 86 and disc 80 may be rotatable upon the post 84 to facilitate positioning of the tank 90 in and removal of the same from a vending machine or the like in which the tank 90 is used.

Waste tank 90 and arm 88, including sleeve 86 and disc 80, are preferably of lightweight metal, so that the weight of liquid waste material 96 delivered to and accumulated in tank 90 will constitute the predominate portion of the weight acting upon spring 78.

Operation

In operation, assuming that the tank 90 has been removed and that sleeve 86 and disc 80 are not disposed upon post 84, spring 78 will yieldably bias the element 74 upwardly to a vertically reciprocated position disposing pin 76 in contact with the bottom of grommet 72. Simultaneously, since the disc 80 is not in place on post 84 and abutting against the upper end of rod 48, the spring 62 will have yieldably biased the rod 48 upwardly to reciprocate the same to a position disposing the cam 50 out of engagement with bend 46 of switch leaf 42, as illustrated in Fig. 4. Leaf 42 will thereupon swing to its normal position out of engagement with the operating plunger 44

of switch 32, and the switch 32 will remain unoperated leaving no connection between contacts 34 and 36 thereof. The operating circuit 38—40 of the vending machine or the like will thus be automatically deactivated. It may be noted that the upper limit of travel of the cam 50 and rod 48 will be defined by the engagement of the stop 61 with the bottom wall 28 of housing 16, and that when the rod 48 is reciprocated to such uppermost limit of its path of travel, as when the tank 90 is removed from the element 74 and the action of spring 62 is not resisted by the weight of the tank 90 and arm 88 through engagement of disc 80 with rod 48, the uppermost end of rod 48 will be disposed substantially above the level of shoulder 79 on element 74.

Assuming that the tank 90 has been emptied and that it is desired to again place the vending machine in condition for dispensing operation, the operator will place the tank 90 within the machine below discharge pipe 94 and with sleeve 86 of arm 88 disposed upon post 84. As the lower extremity of sleeve 86 approaches shoulder 79, the disc 80 will contact the upper end of rod 48 and will bear downwardly thereagainst with the weight of empty tank 90 and arm 88 to reciprocate the rod 48 downwardly a predetermined distance moving cam 50 into the position illustrated in Fig. 2 where cam 50 is engaging the bend 46 of leaf 42 and holding the latter in an operative position. Such swinging of leaf 42 reciprocates plunger 44 of switch 32 to make the connection between terminals 34 and 36 thereof. The operating circuit 38—40 of the vending machine or the like will then be energized and the machine placed in condition for dispensing operation.

It should be pointed out that the spring 62 is preferably comparatively weak and of strength only sufficient to overcome the weight of rod 48, cam 50 and stops 58 and 61 for reciprocating the rod 48 to its uppermost limit of travel when tank 90 is removed, but insufficient to materially impede downward reciprocation of rod 48 under the weight of the empty tank 90 and arm 88. On the other hand, spring 78 is comparatively stronger and is not materially influenced by the weight of arm 88 and tank 90 alone, as when the latter is empty. Thus, when tank 90 is emplaced on element 74, spring 78 still holds element 74 at its upper limit of travel with pin 76 against grommet 72. This assures that disc 80 will not move rod 48 from the position of Fig. 2 to the position of Fig. 3 until the tank 90 has been filled to an extent overcoming spring 78 in a predetermined amount.

As waste material 96 is cumulatively discharged from pipe 94 into tank 90, the weight of the latter will gradually increase, and element 74 will be reciprocated downwardly against the biasing or weighing action of spring 78, the resistance offered by the weak spring 62 preferably being virtually negligible as compared with that offered by the strong weighing spring 78. Simultaneously, the rod 48 will be reciprocated downwardly a like distance by virtue of the engagement of the uppermost end of rod 48 by the disc 80. As such gradual downward reciprocation of element 74 and rod 48 proceeds, the cam 50 will gradually move downwardly relative to the bend 46 of the leaf 42 until, when tank 90 has been filled to a predetermined degree, the bend 46 will be cleared over the uppermost surface 54 of cam 50 as illustrated in Fig. 3. Thereupon, the leaf 42 will swing to its normal unopened position and the connection between terminals 34 and 36 of switch 32 will again be broken. This, of course, breaks the operating circuit 38—40 for the vending machine or the like and the latter will remain deactivated until an operator has removed, emptied and replaced the tank 90.

Any minor adjustment of the tensioning of spring 62 may be made by shifting of the stop sleeve 58. The weight of waste material 96 within tank 90 required to move the cam 50 to the position shown in Fig. 3 for deactivating the vending machine or the like may be con-

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trolled within fairly wide limits by adjustment of the screw 66 to vary the tensioning upon spring 78.

Second illustrative embodiment

Referring next to the form of the invention shown in Figs. 5, 6 and 7, structures numbered the same as those described in connection with the embodiment of Figs. 1-4 inclusive, will be understood to be of comparable nature. Thus, the side panel 10 carries a modified housing 116 by virtue of fastening means 12 and 14, and there is provided within housing 116 and secured to the side wall 130 thereof by means 31 and 33 an electrical switch 32 identical to that above described.

Besides the side wall 130, housing 116 includes a top wall 122, a bottom wall 128 and an end wall 129. Top wall 122 is provided with a single circular opening 120, and bottom wall 128 is provided with a single circular opening 126, opening 126 being directly below and axially aligned with the opening 120. A low friction bearing grommet 172 of nylon or other suitable material is mounted in opening 120 of top wall 122 and receives for vertical reciprocation therethrough an elongated tubular element 174. A second low friction grommet 173 having a depending flange portion 183, is mounted below grommet 172 by means of a bracket 175, the openings of annular grommets 172 and 173 being in vertical, axial alignment. The element 174 extends through and is reciprocable relative to each of grommets 172 and 173.

There is provided on the element 174 between grommets 172 and 173 a switch operating cam 150 which is adjustably secured to the element 174 by means of a set screw 152. The cam 150 is generally similar to the cam 50 above described and includes frusto-conical end portions and a cylindrical intermediate portion.

Secured to the bottom wall 128 by any suitable means such as welding as at 163, is an internally threaded nut 164 axially aligned with the opening 126 of bottom wall 128. Adjustably mounted within nut 164 is an internally and externally threaded, cylindrical sleeve 165. Adjustably mounted within sleeve 165 is an externally threaded, elongated adjusting screw 166 provided with a tool receiving notch 168 at its lower exposed end and a smooth unthreaded uppermost portion 170 within housing 116, which is of lesser diameter than the threaded portion of screw 166 presenting an upwardly facing shoulder 171 on the adjusting screw 166 adjacent the base of smooth portion 170 thereof.

A relatively weak, elongated, tank weighing, compression, coil spring 164 has its lowermost end bearing against the shoulder 171 of screw 166 with smooth portion 170 extending upwardly and within a distance sufficient to maintain the spring in place on shoulder 171. Spring 162 extends upwardly from shoulder 171 of screw 166 into the bore 175 of element 174 and, at its uppermost end, bears against a cross pin 176 mounted on the element 174 and traversing the bore 175 thereof beneath the grommet 172. The purpose of spring 162 is to bias element 174 upwardly for sensing the presence or absence of the weighing tank 90 on the element 74, as will hereinafter be explained.

The element 174 is provided adjacent but spaced from its lowermost end with a downwardly facing shoulder 177, the element 174 being of reduced external diameter therebelow as at 179. An annular washer 181, which may be of fiber or the like, is slidably fitted upon the reduced diameter portion 179 of element 174 and normally abuts against the downwardly facing shoulder 177 of element 174. A relatively strong, compression, waste liquid weighing coil spring 178 of greater diameter than the spring 162 and screw 166, but of lesser diameter than the sleeve 165, bears at its lowermost end upon the uppermost extremity of sleeve 165 and bears at its upper end against the lower face of washer 181. Thus, the relatively strong biasing or weighing action of spring 178 is transmitted to element 174 through the washer 181 and the shoulder 177.

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The weighing tank 90 is, as above described, provided with a laterally extending arm 88 secured to the tank 90 by welding or the like as at 92. Arm 88 is provided at its outermost extremity with a vertical sleeve portion 86 in which is received an elongated, cylindrical post 187 extending below the sleeve 86 and adapted to releasably fit within the uppermost tubular end of element 174. Post 187 is rigidly secured to the sleeve portion 86 of arm 88 by welding or the like as at 189. It will be clear from Fig. 5 that cylindrical post 187 is adapted for sliding reception within the uppermost extremity of element 174 in telescoped relation thereto for mounting the weighing tank 90 in releasable fashion upon the element 174.

Operation of second illustrated embodiment

The operation of the form of the invention shown in Figs. 5-7 inclusive is generally similar to that above described for the embodiment of Figs. 1-4 inclusive, the principal difference between the two forms of the invention being that, in the embodiment of Figs. 5-7 inclusive, the cam 150 is mounted directly upon the single element 174 and the secondary, tank sensing arm 84 is eliminated, the element 174 serving both to sense the presence or absence of the weighing tank 90 upon the element 174 and to weigh the contents of the tank 90.

It will be observed that the sleeve 165 is adjustable within the nut 164 for varying the tension of the spring 178 upon the lower face of washer 181 and shoulder 177 of element 174. Similarly, the tensioning of spring 162 upon the cross pin 176 of element 174 is subject to adjustment by means of the screw 166.

Assuming that the tank 90 is removed, the heavy waste liquid weighing spring 178 will have biased the washer 181 to a position of abutment against the lowermost face of grommet 173, and the tank sensing spring 162 will have exerted a biasing force against pin 176 sufficient to move the element 174 upwardly to a position as indicated in Fig. 7. With the element 174 in the disposition shown in Fig. 7, the cam 150 will be clearing the bend 46 of the operating leaf 42 of switch 36, and the latter will be in unoperated condition. It may be noted that during this phase of the operation, the shoulder 177 progresses upwardly within the depending portion 183 of grommet 173 and away from the washer 181, which remains biased against the lower extremity of grommet 173 by virtue of the spring 178. In this fashion, the weight sensing function of spring 162 is made independent of the substantially stronger weighing spring 178, the latter becoming operative only when the bias of spring 162 has been overcome by emplacement of the empty tank 90 upon the element 174 to reciprocate the latter downwardly until shoulder 177 abuts against washer 181.

When the empty tank 90 is emplaced upon the element 174, the weight thereof is sufficient to overcome the biasing action of spring 162 to reciprocate the element 174 downwardly to a position comparable to that shown in Fig. 5, whereat the cam 150 engages the bend 46 of switch leaf 42 and reciprocates the plunger 44 of switch 32 to operate the latter.

As waste liquid is discharged into the tank 90, the element 174 will gradually reciprocate downwardly against the weighing bias of spring 178 until the same has reached the position shown in Fig. 6 when a predetermined amount of waste liquid has been stored within the tank 90. At such time, the bend 46 of switch leaf 42 will have cleared the upper extremity of cam 150, and the switch 32 will be returned to its unoperated condition.

Obviously, the observations above made regarding the relative strength as springs 62 and 78 apply equally to the springs 162 and 178.

It will now be observed that the structure contemplated by this invention, as evidenced by the embodiments shown and described for purposes of illustration, is both simple and fool-proof in operation and that same is ideally

adapted for accomplishing all of the above-mentioned objectives of the invention. Manifestly, certain minor modifications and changes could be made in some details of construction without materially departing from the true spirit or intention of the invention. Accordingly, it is to be understood that the invention shall be deemed limited only by the scope of the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. For use with a liquid dispensing, vending machine or the like having an electrical circuit for controlling dispensing operation of the machine and liquid drain means for collecting and carrying waste liquid spilled during dispensing to a point of discharge, apparatus for normally receiving and temporarily storing waste liquid discharged from said drain means and for automatically controlling said circuit to prevent further dispensing under conditions when the apparatus is precluded from safely receiving further waste liquid, said apparatus comprising a support; an electrical switch mounted on the support and adapted for coupling with said circuit, said switch having a reciprocable actuating member; a liquid receiving tank; means for releasably mounting the tank on the support in disposition for receiving liquid discharged from said point; cam structure shiftably mounted on the support for reciprocation perpendicularly to the path of reciprocation of the member and engageable with the member for reciprocating the latter to actuate the switch when the structure is reciprocated into a certain position thereof; means yieldably biasing the structure away from said certain position thereof; and means for operably coupling the tank with the structure, when the tank is mounted on the support, for reciprocating the structure to said certain position thereof under the influence of the weight of the tank.

2. For use with a liquid dispensing vending machine or the like having an electrical circuit for controlling dispensing operation of the machine and liquid drain means for collecting and carrying waste liquid spilled during dispensing to a point of discharge, apparatus for normally receiving and temporarily storing waste liquid discharged from said drain means and for automatically controlling said circuit to prevent further dispensing under conditions when the apparatus is precluded from safely receiving further waste liquid, said apparatus comprising a support; an electrical switch mounted on the support and adapted for coupling with said circuit, said switch having a reciprocable actuating member; a liquid receiving tank; means for shiftably mounting the tank on the support in disposition for receiving liquid discharged from said point; means yieldably biasing the tank toward a first position when the tank is empty, the tank being shiftable to a second position under the influence of the weight of a predetermined quantity of said liquid within the tank; cam structure operably coupled with the tank and shiftable therewith, said structure being reciprocable perpendicularly to the path of reciprocation of the member and engageable with the member for reciprocating the latter to actuate the switch when the tank is in one of said positions only.

3. For use with a liquid dispensing vending machine or the like having an electrical circuit for controlling dispensing operation of the machine and liquid drain means for collecting and carrying waste liquid spilled during dispensing to a point of discharge, apparatus for normally receiving and temporarily storing waste liquid discharged from said drain means and for automatically controlling said circuit to prevent further dispensing under conditions when the apparatus is precluded from safely receiving further waste liquid, said apparatus comprising a support; a single electrical switch mounted on the support and adapted for coupling with said circuit, said switch having a shiftable actuating member; a liquid receiving tank; means for releasably and shiftably mounting the tank on the support in disposition for receiving liquid

discharged from said point; structure shiftably mounted on the support and engageable with the member for actuating the switch only when the structure is shifted into an intermediate position thereof; means yieldably biasing the structure away from said intermediate position and toward one extreme position thereof; means yieldably biasing the tank toward a first position when the same is mounted on the support and empty, the tank being shiftable to a second position under the influence of the weight of a predetermined quantity of said liquid within the tank; means for operably coupling the tank with the structure, when the tank is mounted on the support and in said first position thereof, for shifting the structure from said one extreme position to said intermediate position thereof under the influence of the weight of the empty tank; and means for operably coupling the tank with the structure, when the tank is mounted on the support and between said first and second positions thereof, for shifting the structure from said intermediate position to the other extreme position thereof when the tank is shifted to said second position thereof under the influence of the weight of said quantity of liquid within the tank.

4. In apparatus as set forth in claim 3, wherein said means for mounting the tank on the support includes an elongated, upright element mounted for vertical reciprocation on the support, and means on the tank for releasably mounting the latter on the element.

5. In apparatus as set forth in claim 4, wherein is provided spring means yieldably biasing the element upwardly.

6. In apparatus as set forth in claim 5, wherein is provided a screw threadably mounted on the support below and in alignment with the element, said spring means bearing oppositely against the screw and the element.

7. For use with a liquid dispensing, vending machine or the like having an electrical circuit for controlling dispensing operation of the machine and liquid drain means for collecting and carrying waste liquid spilled during dispensing to a point of discharge, apparatus for normally receiving and temporarily storing waste liquid discharged from said drain means and for automatically controlling said circuit to prevent further dispensing under conditions when the apparatus is precluded from safely receiving further waste liquid, said apparatus comprising a support; an electrical switch mounted on the support and adapted for coupling with said circuit, said switch having a reciprocable actuating member; an element mounted on the support; a liquid receiving tank assembly releasably mounted on the element in disposition to receive liquid discharged from said point; cam structure shiftably mounted on the support for reciprocation perpendicularly to the path of reciprocation of the member; means yieldably biasing the structure toward a first position, said structure being disposed for engagement by the assembly when the latter is placed on the element and displaceable to a second position when so engaged by the assembly, said structure being engageable with the member for actuating the switch when the structure is in one of said positions thereof only.

8. For use with a liquid dispensing vending machine or the like having an electrical circuit for controlling dispensing operation of the machine and liquid drain means for collecting and carrying waste liquid spilled during dispensing to a point of discharge, apparatus for normally receiving and temporarily storing waste liquid discharged from said drain means and for automatically controlling said circuit to prevent further dispensing under conditions when the apparatus is precluded from safely receiving further waste liquid, said apparatus comprising a support; an electrical switch mounted on the support and adapted for coupling with said circuit, said switch having a reciprocable actuating member; an ele-

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ment mounted on the support for reciprocation perpendicularly to the path of reciprocation of the member; a liquid receiving tank assembly carried by the element in disposition to receive liquid discharged from said point; means yieldably biasing the element toward a first position thereof when the tank assembly is empty, the element being reciprocable to a second position under the influence of a predetermined quantity of said liquid within the tank assembly; and a cam structure mounted on the support for reciprocation independently of the element but in a path parallel to the path of reciprocation of the element, said structure being disposed for engagement by the tank assembly and displaceable from a first to a second position thereof as the element reciprocates to said second position of the latter, said structure being engageable with the member for actuating the switch when the structure is in one of said positions thereof only.

9. For use with a liquid dispensing vending machine or the like having an electrical circuit for controlling dispensing operation of the machine and liquid drain means for collecting and carrying waste liquid spilled during dispensing to a point of discharge, apparatus for normally receiving and temporarily storing waste liquid discharged from said drain means and for automatically controlling said circuit to prevent further dispensing under conditions when the apparatus is precluded from safely receiving further waste liquid, said apparatus comprising a support; a single electrical switch mounted on the support and adapted for coupling with said circuit, said switch having a shiftable actuating member; an element shiftable mounted on the support; a liquid receiving tank assembly releasably mounted on the element in disposition to receive liquid discharged from said point; structure shiftable mounted on the support; means yieldably biasing the structure toward a first position, said structure being disposed for engagement by the assembly when the latter is placed on the element and displaceable to a second position when so engaged by the assembly when the latter is empty; means yieldably biasing the element toward a first position thereof when the tank assembly is empty, the element being shiftable to a second position thereof under the influence of a predetermined quantity of said liquid within the tank assembly, said structure being shiftable from said second to a third position thereof as the element shifts to said second position of the latter, said structure being engageable with the member for actuating the switch when the structure is in said second position thereof only.

10. For use with a liquid dispensing, vending machine or the like having an electrical circuit for controlling dispensing operation of the machine and liquid drain means for collecting and carrying waste liquid spilled during dispensing to a point of discharge, apparatus for normally receiving and temporarily storing waste liquid discharged from said drain means and for automatically controlling said circuit to prevent further dispensing under conditions when the apparatus is precluded from safely receiving further waste liquid, said apparatus comprising a support; an electrical switch mounted on the support and adapted for coupling with said circuit, said switch having a reciprocable actuating member; an element mounted on the support for reciprocation perpendicularly to the path of reciprocation of the member; a liquid receiving tank releasably mounted on the element in disposition to receive liquid discharged from said point; means yieldably biasing the element toward a first position, the element being reciprocable to a second position under the influence of the weight of the tank when the latter is mounted on the element; and cam structure mounted on the element and reciprocable therewith, said structure being engageable with the member for actuating the switch when the element is in one of said positions thereof only.

11. For use with a liquid dispensing vending machine or the like having an electrical circuit for controlling

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dispensing operation of the machine and liquid drain means for collecting and carrying waste liquid spilled during dispensing to a point of discharge, apparatus for normally receiving and temporarily storing waste liquid discharged from said drain means and for automatically controlling said circuit to prevent further dispensing under conditions when the apparatus is precluded from safely receiving further waste liquid, said apparatus comprising a support; an electrical switch mounted on the support and adapted for coupling with said circuit, said switch having a reciprocable actuating member; an element mounted on the support for reciprocation perpendicularly to the path of reciprocation of the member; a liquid receiving tank carried by the element in disposition to receive liquid discharged from said point; means yieldably biasing the element toward a first position when the tank is empty, the element being reciprocable to a second position under the influence of the weight of a predetermined quantity of said liquid within the tank; and cam structure mounted on the element and shiftable therewith, said structure being engageable with the member for actuating the switch when the element is in one of said positions thereof only.

12. For use with a liquid dispensing vending machine or the like having an electrical circuit for controlling dispensing operation of the machine and liquid drain means for collecting and carrying waste liquid spilled during dispensing to a point of discharge, apparatus for normally receiving and temporarily storing waste liquid discharged from said drain means and for automatically controlling said circuit to prevent further dispensing under conditions when the apparatus is precluded from safely receiving further waste liquid, said apparatus comprising a support; a single electrical switch mounted on the support and adapted for coupling with said circuit, said switch having a shiftable actuating member; an element shiftable mounted on the support; a liquid receiving tank releasably mounted on the element in position to receive liquid discharged from said point; resilient means yieldably biasing the element toward a first position, the element being shiftable against the action of said resilient means to a second position under the influence of the weight of the tank when the latter is mounted on the element and is holding less than a predetermined quantity of said liquid; spring means yieldably biasing the element toward said second position, the element being further shiftable against the action of said spring means to a third position under the influence of the weight of said predetermined quantity within the tank; and structure operably coupled with the element and shiftable therewith, said structure being engageable with the member for activating the switch when the element is in said position thereof only.

13. For use with a liquid dispensing vending machine or the like having an electrical circuit for controlling dispensing operation of the machine and liquid drain means for collecting and carrying waste liquid spilled during dispensing to a point of discharge, apparatus for normally receiving and temporarily storing waste liquid discharged from said drain means and for automatically controlling said circuit to prevent further dispensing under conditions when the apparatus is precluded from safely receiving further waste liquid, said apparatus comprising a support; a single electrical switch mounted on the support and adapted for coupling with said circuit, said switch having a shiftable actuating member; an elongated, upright element mounted on the support for vertical reciprocation; a liquid receiving tank having an arm assembly releasably mounted on the element, the tank being in disposition for receiving liquid discharged from said point when the assembly is on the element; an elongated, upright rod mounted on the support for vertical reciprocation; a cam on the rod engageable with the member for operating the switch; resilient means yieldably biasing the rod toward an uppermost position

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thereof; and spring means yieldably biasing the element toward an uppermost position thereof, said spring means being substantially more resistant to yielding than said resilient means, said assembly being engageable with the rod for reciprocating the latter to an intermediate position when the tank is empty and the assembly is on the element and for reciprocating the rod to a lowermost position thereof when the element is shifted to a lowermost position thereof under the influence of the weight of a predetermined quantity of liquid within the tank, the cam being in actuating engagement with the member only when the rod is between said uppermost and lowermost positions thereof.

14. For use with a liquid dispensing vending machine or the like having an electrical circuit for controlling dispensing operation of the machine and liquid drain means for collecting and carrying waste liquid spilled during dispensing to a point of discharge, apparatus for normally receiving said temporarily storing waste liquid discharged from said drain means and for automatically controlling said circuit to prevent further dispensing under conditions when the apparatus is precluded from safely receiving further waste liquid, said apparatus comprising a support; a single electrical switch mounted on the support and adapted for coupling with said circuit, said switch having a shiftable actuating member; an elongated, upright element mounted on the support for vertical reciprocation; a liquid receiving tank releasably mounted on the element in disposition for receiving liquid discharged from said point; a cam on the element engageable with the member for operating the switch; resilient means yieldably biasing the element toward an uppermost position thereof, said element being shiftable to an intermediate position thereof under the influence of the weight of the tank when the latter is empty and on the element; and spring means yieldably biasing the element upwardly toward said intermediate position thereof, said element being shiftable to a lowermost position thereof under the influence of the weight of a predetermined quantity of

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liquid within the tank, said spring means being substantially more resistant to yielding than said resilient means, said cam being in actuating engagement with the member only when the element is between said uppermost and lowermost positions thereof.

15. In apparatus as set forth in claim 14, wherein said spring means comprises a coiled, compression spring, said element is provided with a projection for engaging the uppermost extremity of said spring, and there is provided stop means limiting the extent of upward travel of the uppermost extremity of said spring.

16. In apparatus as set forth in claim 14, wherein said resilient means and said spring means each comprises a coiled, compression spring, one of said springs being disposed within the other, both of such springs being disposed for engagement of their uppermost extremities with parts of the element.

17. In apparatus as set forth in claim 16, wherein one of said springs is in continuous, upwardly biasing engagement with the element and the other of said springs is in upwardly biasing engagement with the element only when the latter is in a position at least as low as said intermediate position thereof.

18. In apparatus as set forth in claim 16, wherein is provided an internally and externally threaded sleeve shiftable mounted on the support below and in alignment with the element, and a screw threadably mounted in the sleeve, said one spring bearing at its lower extremity against the screw, said other spring bearing at its lower extremity against the sleeve.

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