Nov. 22, 1966 F. L. SAWYER 3,286,724

FLOAT CONTROL MEANS

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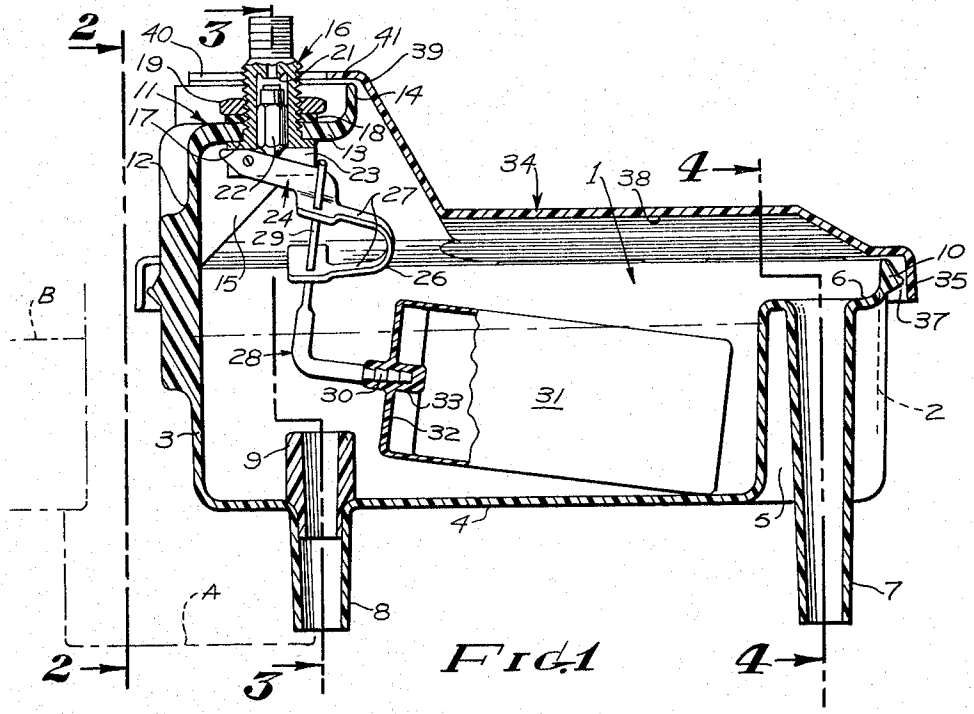


FIG. 1

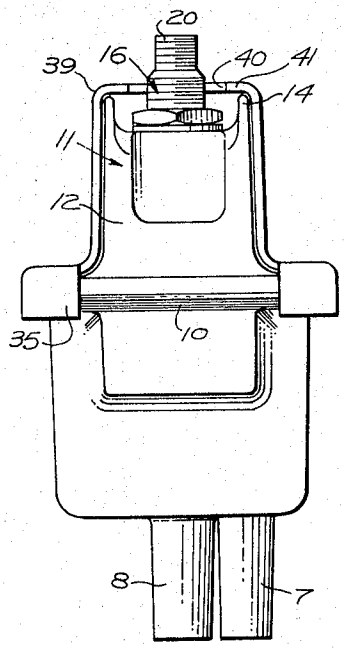


FIG. 2

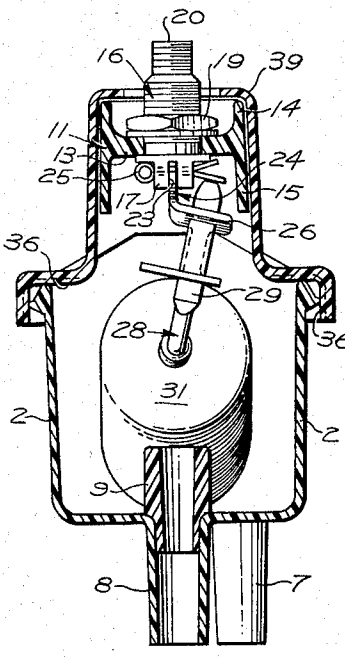


FIG. 3

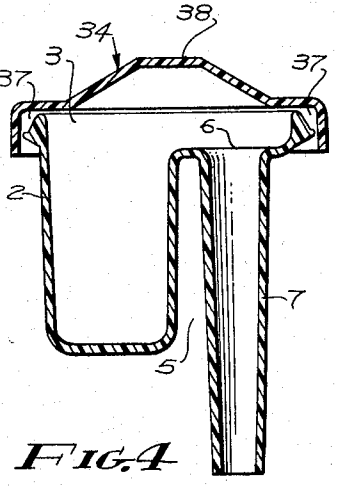


FIG. 4

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FLOAT CONTROL MEANS

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This invention relates to float control means, and included in the objects of this invention are:

First, to provide a float control means which is particularly adapted, but not limited, for use in conjunction with ice-making equipment employed in the automatic production of ice cubes or flaked ice.

Second, to provide a float control means which utilizes a novelly arranged float housing adapted to be mounted outside the freezing zone of an ice-making machine, and operatively connected therewith to maintain a predetermined level therein.

Third, to provide a float control means which incorporates a novel arrangement permitting ready adjustment of the float so as to maintain the supply water at precisely the correct level.

Fourth, to provide a float control means wherein the housing and cover are molded of plastic material and contoured to facilitate maintenance in a sanitary condition, the cover fitting the housing in such a manner that contamination is minimized yet permitting movement of air into and out of the housing as the water level is lowered or raised.

With the above and other objects in view, as may appear hereinafter, reference is directed to the accompanying drawings, in which:

FIG. 1 is a longitudinal, sectional view of the float control means;

FIG. 2 is an end elevational view taken from 2—2 of FIG. 1;

FIG. 3 is a transverse sectional view taken substantially through 3—3 of FIG. 1;

FIG. 4 is a transverse sectional view taken through 4—4 of FIG. 1.

The float control means includes a rectangular housing 1 having side walls 2, end walls 3, and a bottom wall 4, the upper side being open. One corner of the housing 1 is externally recessed as indicated by 5. The recessed corner terminates short of the upper side of the housing 1 to form a shelf 6 from which depends an overflow tube 7.

Near the opposite end of the housing 1 the bottom wall 4 is provided with an outlet tube 8. In the use of the float control means for supplying water to ice-making equipment, the outlet tube 8 is connected by a supply line A to the container B, as indicated by broken lines in FIG. 1, in which the ice is formed. In this case the level of water to be maintained in the float control means corresponds to the level of the water or ice in the container B. In order that the water will not normally drain fully from the housing 1, the outlet tube 8 is provided with a removable tubular plug 9.

The upper portion of the housing 1 is provided with a peripheral bead 10 which reinforces the open upper side of the housing 1.

The end of the housing 1 opposite from the overflow tube 7 is provided with a bracket 11 which includes a vertically extending portion 12 terminating in a horizontal shelf 13 overlying the housing 1. Except for the side of the shelf 13 joined to the vertical extension 12, the margins of the shelf are provided with an upstanding rim 14. For reinforcing purposes the underside of the shelf 13 is attached to the vertical extension 12 by ribs 15, and portions of the vertical extension 12 as well as the adjacent portion of the end wall 3 are increased in thickness.

The housing structure thus far described is preferably molded of acryolonitrile-butadiene-styrene polyethylene or other plastic material which has a slight degree of flexibility, and which presents a surface which may readily be maintained in a sanitary condition.

The shelf 13 is provided with an aperture which receives a valve body 16 having a head 17 at its lower end. The body 16 is externally screw-threaded to receive a washer 18 and a nut 19 for the purpose of clamping the valve body 16 firmly to the shelf 13. The upper portion of the valve body is reduced in diameter and provided with screw threads 20 for attachment by a suitable fitting, not shown, to a water supply line.

The valve body 16 is provided with an axial bore therethrough constricted to form a valve seat 21. Below the valve seat 21 the bore of the valve body 16 is enlarged to receive a slidable valve pin 22, which is preferably hexagonal in cross section so that water may flow around the valve pin 22 and discharge from the lower end of the valve body 16. The upper end of the valve pin 22 is provided with a valve washer which engages the valve seat 21.

The valve head 17 is provided with a cross slot 23 which receives a control lever 24. The control lever is pivotally secured in the cross slot 23 by a cotter pin 25 which forms a fulcrum. The control lever 24 extends toward the remote end of the housing 1 and is attached to one end of a U-clip 26.

The U-clip 26 includes diverging legs 27 which have aligned slots. A float-supporting rod 28 is provided which includes an upwardly extending flat portion 29 which extends through the aligned slots in the diverging legs 27. The U-clip 26 functions as a leaf spring so arranged that, when the diverging legs 27 are pressed toward each other, the flat portion 29 of the float-supporting rod 28 may be adjusted lengthwise, but when the diverging legs 27 are released the flat portion 29 is firmly held in its adjusted position.

The float-supporting rod 28 extends downwardly from the flat portion 29 a short distance and then is bent horizontally to form an attachment end 30. A float 31 is provided, preferably formed of plastic material, and having a reinforced end 32 including a boss 33 having a socket therein which receives the attachment end 30. The attachment end may be provided with serrations, or the like, so that the supporting rod 28 and float 31 may be forced together without other fastening means.

The housing 1 supports a cover 34 having a depending marginal flange 35 covering the side walls 2 and one end wall 3, and partially covering the remaining end wall of the housing. Internally, the marginal flange 35 and adjacent portions of the cover 34 are provided with thin pads 36 spaced from each other so that vent channels 37 are formed between the housing 1 and the cover 34.

The midportion of the cover 34 is raised as indicated by 38 to provide a clearance for the float 31. In addition, the cover 34 is provided with an upward extension 39 which embraces the bracket 11 and is provided with a slot 40 to clear the valve body 16. The margins 41 of the slot 40 overlie the marginal rim 14.

The cover 34 is likewise formed of plastic material, such as polyethylene, which is slightly flexible and which is readily maintained in a sanitary condition.

It will be noted that the cover 34 provides complete dust protection for water contained in the housing 1. It does not, however, form a seal. This is of substantial importance, for the vent channels 37 have sufficient cumulative area that, should the overflow tube 7 or the line connected therewith fail to function, water will dis-

charge from the vent channels **37** rather than raising to a level which would permit backflow through the valve body **16**.

By reason of the fact that the float-supporting rod **28** may be readily adjusted with respect to the control lever **24**, the water level within the housing **1** may be maintained precisely at the desired level so that the corresponding level of water or ice in the ice-making apparatus may be held within close limits.

The tubular plug creates a sump which collects solid particles that may be carried by the water, yet is removable to flush or clean the sump.

While a particular embodiment of this invention has been shown and described, it is not intended to limit the same to the exact details of the construction set forth, and it embraces such changes, modifications and equivalents of the parts and their formation and arrangement as come within the purview of the appended claims.

What is claimed is:

1. A float control means, comprising:

(a) a float housing having a raised bracket at one end;

(b) a cover for said housing having a raised portion at one end partially covering said bracket;

(c) a float valve body having an inlet at its upper end and an outlet at its lower end, and a valve element controlling flow from said inlet;

(d) a valve-actuating lever pivotally attached to said valve body and engageable with said valve element, the extended end of said lever being folded to form an integral U-shaped spring clip, having a pair of essentially aligned slots;

(e) a float arm having a portion frictionally slidable in said slots thereby to effect vertical adjustment of said float arm;

(f) and a float carried by said arm.

2. A float control means, comprising:

(a) an essentially rectangular float housing open at its upper side and having a re-entrant corner forming an upwardly exposed shelf near said upper side, an overflow tube piercing said shelf depending from said shelf, said overflow tube being accessible for cleaning from the upper surface of said shelf, an outlet tube extending from the bottom of said housing, and a bracket overhanging one end of said housing and disposed above its open side;

(b) a cover for said housing having a raised portion at one end partially covering said bracket;

(c) a float valve mounted on said bracket and having an inlet at its upper end and a downwardly directed discharge end to discharge water into said float housing;

(d) a float disposed in said housing;

(e) and operating means connecting said float and float valve.

3. A float control means, comprising:

(a) an essentially rectangular float housing, open at its upper side;

(b) a bracket at one end of said housing, including an upstanding portion continuing from an end of said housing, and a shelf overlying and spaced above the upper side of the housing;

(c) integral upstanding walls bordering said shelf except in the region of the upstanding portion of the said bracket whereby moisture collected on said shelf drains over said bracket and outside said float housing;

(d) a cover for said housing, including a raised portion covering the walls of said shelf and defining a clearance aperture above said shelf;

(e) a float valve mounted on and projecting through said shelf;

(f) and a float disposed in said housing and connected to said float valve.

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