My invention relates to an improvement in liquid dispensing apparatus for a refrigerator door.

Refrigerators have previously been constructed incorporating water tanks in which a supply of cold water may be maintained. Difficulty has often been experienced in filling these tanks due to the inconvenient location of the tank. Collapsible filling tubes have been provided through which water may more conveniently be inserted into the tank. Even when so equipped, however, the storage tanks have usually been difficult to remove and clean.

It is an object of the present invention to provide a refrigerator incorporating a water storage tank mounted on the interior of the refrigerator door so that the tank is readily accessible for filling purposes and also may be conveniently cleaned.

A further object of the present invention is to provide a storage tank equipped with a valve controlled drain tube extending through the door of the refrigerator. As a result cold water may be removed from the tank without opening the refrigerator door.

A further feature of the present invention resides in the concealing of the drain tube outlet within a housing below the latch housing in which the door latch mechanism is concealed. The appearance of the refrigerator is accordingly not marred by additional hardware, a single fixture thus incorporating both the cold water faucet and the door latch mechanism.

A feature of the present invention resides in providing a valve controlled outlet faucet in a refrigerator door fixture and in operating the valve mechanism by a pressure actuated slide. By providing an inward pressure against the sliding portion of the fixture the valve may be opened so as to allow water to flow into a suitable receptacle.

A feature of the present invention resides in providing a delayed action valve for controlling the flow of fluid into a glass or similar receptacle pressed against the controlling slide mechanism. As a result the glass may be placed in position beneath the faucet before the faucet is open so as to ensure the proper flow of fluid into the glass or other receptacle.

A further feature of the present invention resides in the provision of a cooling tank provided with an outlet tube extending through the refrigerator wall controlled by a valve at the outlet of the tube. This valve is actuated by a control mechanism through pressure of a glass thereagainst. The valve is so arranged that it will not open until the glass is well beneath the faucet. Furthermore, the valve closes before the glass is removed from beneath the same. As a result little or no water is allowed to drip from the faucet after the glass has been removed.

These and other objects and novel features of my invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of my specification:

Figure 1 is a perspective view of a portion of the front of a refrigerator showing the combined latch and faucet apparatus.

Figure 2 is a vertical section through the faucet fixture and valve showing the construction thereof.

Figure 3 is an enlarged section of a detail portion of the construction shown in Figure 2.

Figure 4 is a section through a portion of the water tank showing the manner in which it is connected to the refrigerator.

The refrigerator includes a body 10 having a door opening 11 which is normally closed by the door 12. The manner in which the door is connected to the refrigerator is not shown in the drawings as this hinge structure is well known in the art. The body 10 usually includes an outer covering 13 and an inner liner 14. The covering 13 is shown as having an inturned flange 15 at the door opening which terminates in a rearwardly extending marginal edge 16. A breaker strip structure 17 is interposed between the liner 14 and the outer covering 15 to prevent the free flow of heat into the refrigerator. The breaker strip 17 has a fixed projecting keeper of hook shape which is engageable with the latch mechanism to hold the door closed as will be later described in detail.

The door 12 is provided with an inner liner 18 and an outer covering 19. Insulation 20 is interposed between the coverings. The inner wall of the door 12 is provided with a recess 23 therein to accommodate a water tank 24. The water tank 24 fits within the recess 23 in the door 12 and is held in place by any suitable means not illustrated in the drawings. In Figures 2 and 4 of the drawings it will be noted that a bracket 25 is secured to the door lining 20 within the recess 23 and projects outwardly from the lining toward the interior of the refrigerator. The bracket 25 includes a circular inlet aperture 26 provided with a gasket 27 into which the flared end 29 of the tank outlet may extend. The weight of the tank 24 and the liquid therein holds the tank securely upon the gasket 27 to prevent leakage between the tank and the bracket 25. Water or any other
liquid is conducted from the tank 24 through the passage 30 in the bracket 25 to the interior of the door between the liner 20 and the outer covering 21. The bracket 25 terminates in a threaded outlet aperture 31 which accommodates a tube or pipe 32 leading to the faucet valve indicated in general by the numeral 33. The tube 32 extends through the insulation 32.

The valve 33 is supported by an elongated housing 34 which is secured to and supported by the outer door covering 21. This housing 34 acts to support the valve, portions of the door latch and the faucet operating mechanism and the faucet member 47 which is formed as a trough-shaped member having closed ends and a marginal flange 35 by means of which it is secured to the door covering 21. The housing 34 is concealed normally by the door latch and the faucet actuating mechanism.

The detail structure of the faucet 33 is best illustrated in Figure 3 of the drawings. The faucet valve includes a substantially cylindrical body sleeve 36 having an enlarged diameter inner end 37 which is internally threaded to accommodate the plug 38. The plug 38 is sealed to the end 37 by a gasket 40. The plug 39 acts to compress a spring 41 which exerts pressure against a valve 42. The valve 42 includes a spider-like valve guide 43 and a relatively resilient tapered valve element 44 of rubber or suitable composition. A valve rod 45 extends forwardly from the valve and by applying longitudinal pressure against this rod 45 the spring 41 may be compressed to move the valve away from its valve seat 46. As soon as pressure on the valve rod 45 is released the spring 41 returns the valve to its closed position. The inlet pipe 31 is connected to the valve body 36 to introduce liquid thereto. When the valve 42 is open the water flows through the valve and out the faucet outlet 47 which extends forwardly and downwardly from the valve body. A flange 48 is provided on the valve body by means of which the valve may be attached to the housing 34.

A supporting plate 50 is secured to the housing 34 by means of cap screws 51 or other suitable means. The supporting plate extends upwardly within the housing 34 to form a support for a pivot 52. The pivot 52 supports a lever 53 and a spring 54 engages the lever 53 to urge the same in a counter-clockwise direction away from the valve rod 45. However, when the lever 53 is moved in a clockwise direction it engages the forwardly projecting end of the valve rod 45 and urges the same inwardly compressing the spring 41 and opening the valve to allow fluid to flow through the outlet faucet 47.

A forwardly projecting housing member 55 is pivoted at 56 to the lower end of the housing 34. The housing member 55 acts as the capacity for the open inner side of the housing 34 and also acts to enhance the appearance of the refrigerator. The housing member 55 projects outwardly from the door and forms in combination with the door latch an elongated decoration which adds materially to the appearance of the door 21.

As best illustrated in Figure 2 of the drawings the lower end of the housing member 55 is slotted at 57 to receive the pivot 56. As a result the housing member 55 may be removed from the pivot 56 when it is so desired. The manner in which the housing portion may be removed will be later described in detail. Normally, however, this housing portion 55 forms a continuation of the door latch and mounting and is held in place by its own weight and by the fact that it cannot be moved upwardly due to its alignment with the remaining portions of the hardware.

The housing member 55 includes an inner wall 59 which extends downwardly for some distance from the upper edge of the member. This inner wall in conjunction with the outer wall forms a pocket or receptacle 60 which is normally positioned directly beneath the outlet of the faucet member 47. Thus any liquid which drains from the faucet after the valve is closed drops into the receptacle 60 where it is kept until it is emptied or until it evaporates.

As best illustrated in Figure 3 of the drawings a pivoted catch 61 is pivoted at 62 to the inner wall 59 of the housing member 55. The spring 63 urges the latch in a counter-clockwise direction. A shoulder 64 on the latch engages the inner wall 59 and limits pivotal movement of the latch in a counter-clockwise direction. A shoulder 65 on the latch 61 engages a metallic shield 66 overlying the faucet outlet 47 to prevent the housing member 55 from being pushed outwardly beyond alignment with the shield 66.

A finger 67 is provided on the latch 61 which extends externally of the housing member 55. By engaging the finger 67 the latch 61 may be moved in a clockwise direction to disengage the shoulder 65 from the shield 66. The housing member 55 may then be swung outwardly and lifted from the pivot 66 when it is desired to empty the drainage receptacle 60.

The housing member 55 engages the lower end of the arm 53. Thus an inward force against the upper portion of the housing member 55 tends to pivot this housing member about its pivot 55 into the position shown in Figure 2 of the drawings. When in this position the housing member is moved out of the path of liquid flowing through the faucet outlet 47 and the valve 33 is opened to allow fluid to flow. In order to catch the fluid flowing from the faucet 33, it is usual practice to form the housing member 55 inwardly with a suitable receptacle so that the liquid will flow into the glass as soon as the faucet is exposed and the valve is opened.

Thus it will be seen that fluid may be removed from the water tank by merely pressing inwardly on the top of the housing 55 with a glass or other receptacle. The valve rod 45 is so proportioned that the valve will not open until the lower end of the faucet is uncovered, thereby preventing fluid from being spilled or allowed to flow into the receptacle 60. Thus the valve is delayed in action during its opening movement. As the glass is removed the valve 33 closes to cut off the flow of fluid. Any liquid draining from the faucet 33 will be captured in the receptacle 60.

It will be seen from an examination of Figures 1 and 2 of the drawings that the door latch and faucet mechanism form an integral hardware item which is extremely attractive as well as useful. The top part of the latch handle is fixed while the latch handle 53 pivots relative thereto. The lower end of the handle 33 extends into proximity with the shield 66 overlying the forwardly projecting end of the faucet for concealing the same from view. The housing member 55 normally extends in alignment with the shield 66, but may be removed if desired to empty the receptacle 60.

The operation of my apparatus is obvious from
the foregoing description. The manner in which the door may be opened has been described. The manner in which the faucet valve 33 may be opened by the inward pressure of a gass against the housing 34 has also been described. The tank 24 may be removed for cleaning purposes and may be refilled when desired by merely removing the cover of the tank not illustrated and inserting more water in the tank.

In accordance with the patent statutes, I have described the principles of construction and operation of my combination refrigerator door handle and faucet, and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that obvious changes may be made within the scope of the following claims.

I claim:

1. A faucet mechanism for refrigerator doors comprising a storage tank within the refrigerator, a faucet passage communicating with said tank and extending through said door, a faucet passage communicating with said tank and extending through said door, a movable member mounted on the outer surface of said door below the outlet of said faucet passage, a valve in said faucet passage, and means connecting said valve and said movable member whereby said valve may be operated by movement of said movable member.

2. A faucet apparatus in combination with a refrigerator door comprising a liquid storage tank within the refrigerator, a faucet passage communicating with said tank and extending through the door, a movable member mounted on the outer surface of said door below the outlet of said faucet passage, a valve in said faucet passage, and means connecting said valve and said movable member whereby said valve may be operated by movement of said movable member.

3. A faucet mechanism in combination with a refrigerator door including a tank secured within the refrigerator, a faucet passage communicating with said tank and extending through the door terminating in an outlet extending to the exterior of said refrigerator, a movable member secured to the outer surface of the door immediately below said outlet, a valve means in said faucet passage, and means connecting said movable member to said valve means to operate said valve means by movement of said movable member when said movable member is moved from beneath said outlet.

4. A faucet apparatus for use in combination with a refrigerator comprising a storage tank within the refrigerator, a faucet passage extending from said tank to the exterior of the refrigerator, an elongated housing having an upper portion provided with an open bottom through which liquid from said faucet passage may flow, said housing including a bottom portion normally closing said open lower end of said upper portion and movably out of alignment with said upper portion, a delayed action valve in said faucet passage, and means connecting said lower portion of said housing to said valve, movement of said lower portion of said casing out of alignment with the upper portion thereof acting to open said delayed action valve.

5. A refrigerator liquid cooling system comprising a storage tank within the refrigerator, a faucet passage communicating with said tank and extending to the exterior of said refrigerator, an elongated housing having an upper portion provided with an open bottom through which liquid from said faucet passage may flow, said housing including a bottom portion normally closing said open lower end of said upper portion and movably out of alignment with said upper portion, a delayed action valve in said faucet passage, and means connecting said lower portion of said housing to said valve, movement of said lower portion of said casing out of alignment with the upper portion thereof acting to open said delayed action valve.

6. A faucet apparatus for use in combination with a refrigerator including a storage tank within the refrigerator, a faucet passage extending from said tank to the exterior of the refrigerator, an elongated housing having an upper portion provided with an opening in the lower end thereof, said faucet passage communicating with said opening, a valve in said faucet passage, a lower housing portion movably supported below said upper housing portion, means connecting said lower housing portion to said valve for operating the same in unison, and a receptacle in said lower housing portion for catching any drainage from said faucet passage when said lower housing portion is in aligned position below said upper housing portion.

7. A refrigerator liquid dispenser comprising a storage tank within a refrigerator, a faucet passage communicating with said tank and extending to the exterior of said refrigerator, a movably mounted receptacle beneath the end of said faucet passage, a valve in said faucet passage, means connecting said movably housed to said valve to open said valve when said receptacle is moved from position beneath the end of said faucet passage.

8. A refrigerator liquid dispenser comprising a storage tank within a refrigerator, a faucet passage communicating with said tank and extending to the exterior of said refrigerator, a movably mounted housing beneath the end of said faucet passage, a valve in said faucet passage, means connecting said movably housed to said valve to open said valve when said housing is moved from position beneath the end of said faucet passage, and a drain receptacle in said housing for catching drainage from said faucet passage when said valve is closed.

9. A faucet apparatus for use in combination with a refrigerator comprising a storage tank within the refrigerator, a faucet passage extending from said tank to the exterior of the refrigerator, an elongated housing on the exterior of the refrigerator having a movable part, said faucet passage terminating within said housing above said movable part, a valve in said faucet passage, and means connecting said movable part and said valve for actuating said valve when said movable part is moved from beneath the outer extremity of said faucet passage.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Date</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,274,409</td>
<td>Feb. 24, 1942</td>
<td>Harbison</td>
</tr>
</tbody>
</table>