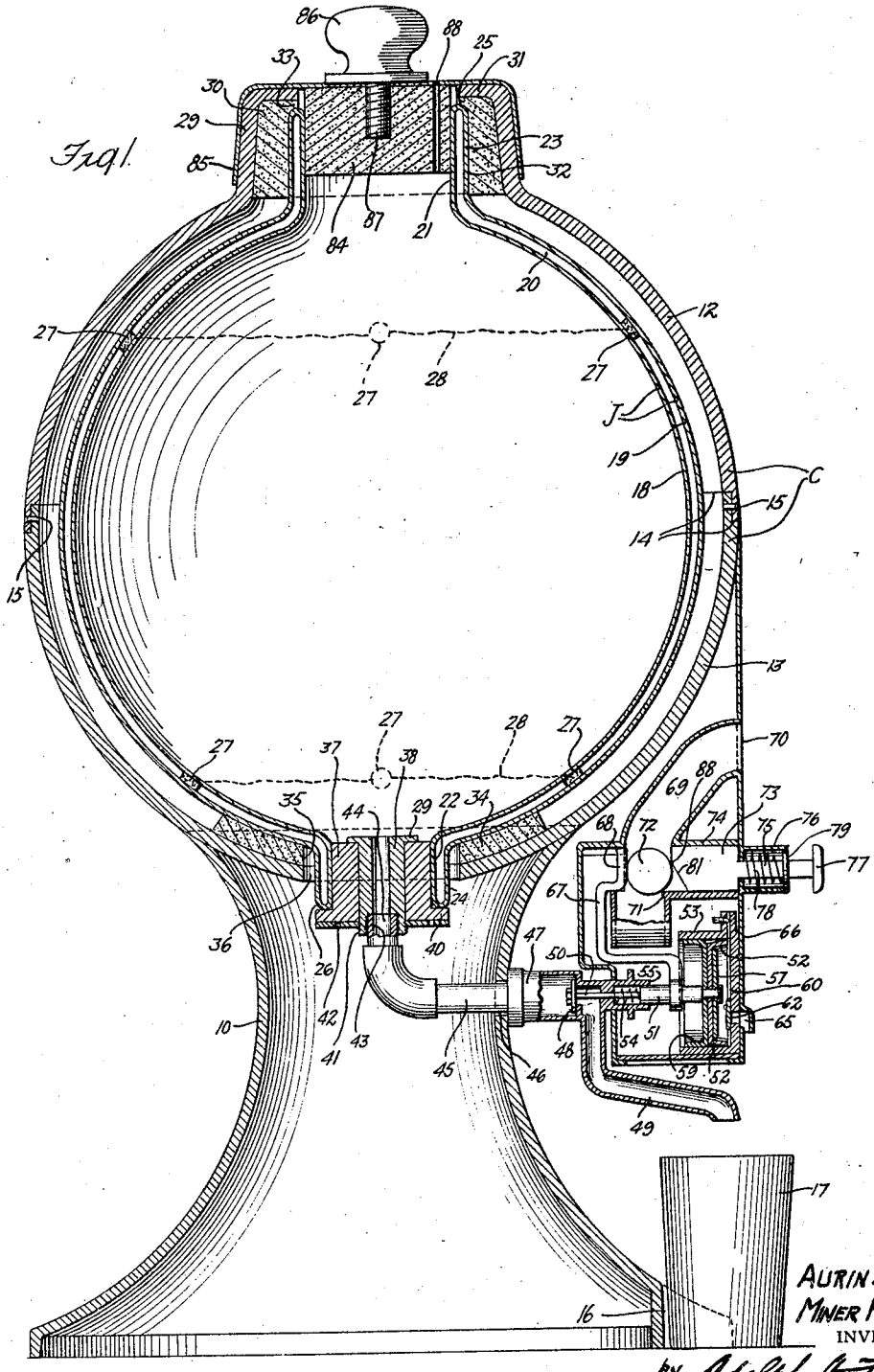
March 3, 1931. A. E. PAYSON ET AL 1,794,641

LIQUID DISPENSING DEVICE

Filed Dec. 14, 1928 2 Sheets-Sheet 1

Fig 1.



AURIN E. PAYSON
MINER P. WETMORE
INVENTORS

by Adolph A. Thomas
ATTORNEY

March 3, 1931. A. E. PAYSON ET AL 1,794,641

LIQUID DISPENSING DEVICE

Filed Dec. 14, 1928 2 Sheets-Sheet 2

Fig. 2.

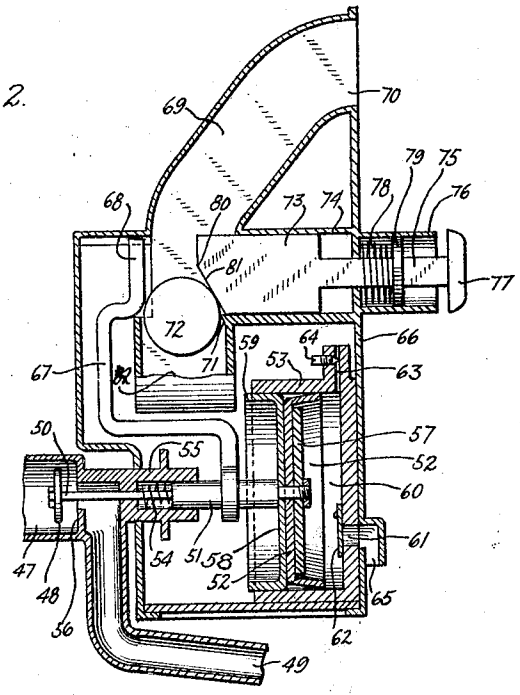
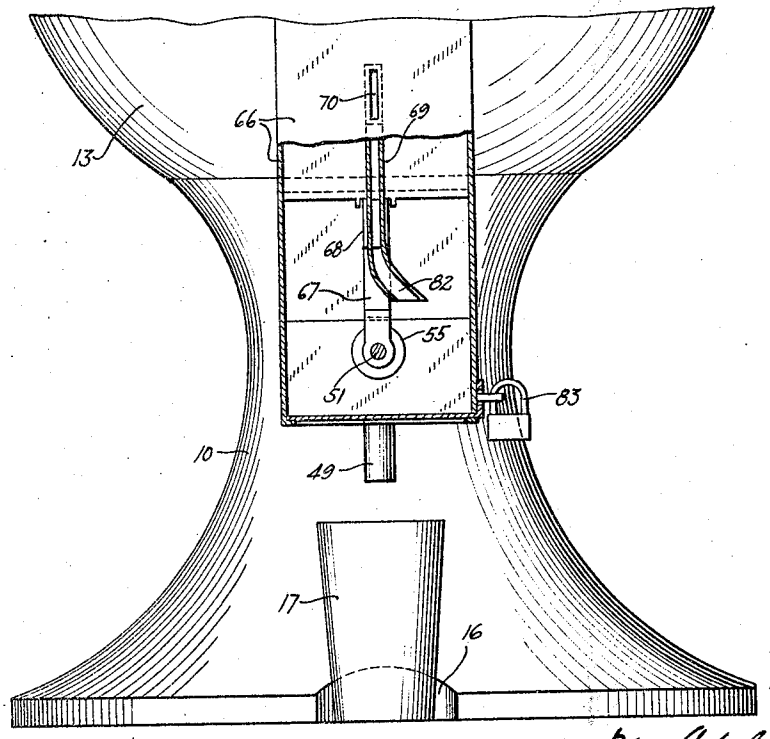


Fig. 3.



AURIN E. PAYSON
MINER P. WETMORE
INVENTORS
by Adolph A. Thomas
ATTORNEY

Patented Mar. 3, 1931 1,794,641

UNITED STATES PATENT OFFICE

AURIN E. PAYSON AND MINER P. WETMORE, OF NORWICH, CONNECTICUT

LIQUID-DISPENSING DEVICE

Application filed December 14, 1928. Serial No. 326,008.

Our invention is for a novel construction of dispensing apparatus having a spherical heat-insulated container connected at the bottom with discharge mechanism which automatically measures a predetermined quantity of cooled or hot liquid. The discharge mechanism, which may be coin-controlled or operable as a free dispenser, has a valve connected to a dash pot for so timing the movement of the valve to closing position that a measured amount of liquid is discharged at each operation of the device. The spherical container for the liquid is preferably a double-walled vacuum jar of glass having a filling opening at the top and a discharge opening at the bottom, these openings being in substantially diametric alignment as integral tubular extensions of the jar. The discharge opening of the jar is fitted with an elastic plug or bushing to which a pipe is connected. To protect the spherical glass jar from injury, it is enclosed in a spherical casing, usually of metal, and supported at the top and bottom by shock-absorbing means, such as rings, or collars of cork, rubber and the like. These rings or collars also serve as heat insulators by holding the jar out of contact with the metal of the casing.

The practical advantages and novel features of our invention will be understood from a detailed description of the accompanying drawings, in which—

Fig. 1 shows a vertical section through a liquid dispenser embodying our invention, the coin-controlled discharge mechanism being in normal position;

Fig. 2 is an enlarged detached view of the discharge mechanism showing the valve opened through the medium of a deposited coin; and

Fig. 3 represents a front view of the lower portion of the apparatus, the coin-controlled attachment being partly in section for clearness.

The apparatus is mounted on a stand 10 which supports a spherical casing indicated as a whole by C and comprising two hemispherical sections 12 and 13. The ends of these sections overlap at 14 to form a tight joint, and screws 15 or other removable fastening members hold the sections rigidly together to form a spherical outer casing. The parts 10, 12 and 13 may be cast of iron, aluminum, bakelite, or other suitable material, and the lower section 13 may be cast integral with the hollow stand 10. The base portion of stand 10 has a recess 16 to permit the placing of a glass or cup 17 in correct receiving position.

A spherical container J is supported in the vertical casing C, and this container is preferably a double-walled vacuum jar of glass having an inner wall 18 and an outer wall 19. The space 20 between these walls is evacuated for heat-insulating purposes. The inner wall 18 has an upper cylindrical (or slightly conical) extension 21 and a similar extension 22 at the bottom. Likewise, the outer wall 19 is provided at the top and bottom with tubular extensions 23 and 24. The two pairs of extensions 21—23 and 22—24 are sealed or fused together at the annular edges 25 and 26 respectively. It is usual to insert spacing pads 27 between the spherical glass walls 18 and 19 of the jar, these pads being generally asbestos disks held together by a wire 28. The primary purpose of these pads is to hold the walls 18 and 19 in concentric spaced relation during the assembly of the jar, and they also serve as shock-absorbers during the handling and use of the apparatus. It will be noticed that the vacuum space 20 of jar J extends into the double-walled top extension 21—23 and bottom extension 22—24. The jar may be assembled in this way:

The inner and outer walls 18 and 19 with their integral extensions are blown separately in suitable molds. The outer spherical wall or bulb 19 is cracked along its equator to form two hemispherical halves. The upper half of bulb 19 is inserted over the top of the inner bulb 18, the two parts being held in spaced concentric relation by the pads 27. The neck extensions 21 and 23 are fused at the circular edge 25. The next step is to place the lower half of bulb 19 over the lower half of the inner bulb or wall 18, whereupon the two halves of the outer bulb are sealed together along the previously severed edge. The bottom extensions 22 and 24 are sealed at

the circular edge 26. The assembled jar is now ready for exhausting in the usual way. When the jar J is of large size, it is preferably made of pyrex glass, or other glass capable of standing up under conditions of use. The spherical shape of the jar gives it not only unusual strength, but also a maximum capacity in a minimum space.

To hold the double-walled vacuum jar J firmly in the outer spherical casing C, we provide the latter with a cylindrical or slightly conical extension 29 adapted to hold a collar 30 of cork, rubber or similar material. The extension 29 terminates in a horizontal flange 31 against which the collar 30 is jammed tight, and it may be glued or cemented in position if desired. The collar 30 has a central opening 32 for receiving the cylindrical extension 23 of the jar in a tight fit. The rounded top edge 31 of the jar engages an annular shoulder 33 of collar 30. A flat ring 34 of cork, rubber or similar material is placed on the bottom of casing section 13 to engage the bottom of the spherical jar J. It is clear from Fig. 1 that the jar is held firmly in casing C by the collar 30 and ring 34 in such a way that the jar is positively held against lateral and axial movement. The glass of the jar does not touch the metal of the casing. The cork or rubber supports 30 and 34 not only act as shock absorbers, but also as heat insulators. The bottom extension 22—24 of the jar passes through aligned openings 35 and 36 in ring 34 and casing section 13.

The bottom opening of jar J is closed by a rubber bushing 37 which carries a metal sleeve 38 having a flange or collar 39 at its upper end. The elastic bushing 37 has an annular shoulder 40 at the bottom adapted to bear against the lower edge 36 of the jar. The lower end 41 of sleeve 38 is screwthreaded and has mounted thereon a flanged nut 42. It is evident from Fig. 1 that, by tightening the nut 42, the rubber bushing 37 is compressed and forced against the cylindrical glass wall 22 to make an airtight joint. The lower end of sleeve 38 is threaded inside at 43 to receive a standard pipe fitting 44 having a horizontal extension 45, which projects through an opening 46 in the hollow stand 10.

The discharge pipe 45 is connected to a faucet 47 which carries a reciprocable valve 48 to control the outlet 49. The valve stem 50 is connected to a plunger 51 which carries a piston 52 mounted to operate in a cylinder 53 with an airtight fit. An expanding coil spring 54 surrounding the valve stem 50 in the cylindrical housing 55 normally holds the valve 48 pressed against its seat 56. The piston 52 may be a flanged disk of flexible material like leather or rubber clamped on the rod 51 between a pair of metal disks 57 and 58. The disk 58 has a cylindrical flange 59 which slides easily in cylinder 53. It is evident that the parts 52 and 53 constitute a dash pot for controlling the movement of the discharge valve 48. The chamber 60 of the dash pot has an air intake opening 61 controlled by a flap valve 62. An air bleed or exhaust opening 63 is regulated by a screw 64 to time the action of the dash pot when the spring 54 moves the valve 48 to closing position. When the piston 52 moves toward the left, the flap valve 62 automatically opens to let air in through the opening 61, so that the valve 48 is opened easily and quickly. The air intake 61 is open to the atmosphere through an opening 65 in the casing 66 which encloses the valve-operating mechanism. When the piston 52 returns to normal position under the action of spring 54, the valve 62 automatically closes and the air in chamber 60 escapes slowly through the opening 63.

The valve plunger 51 carries an upright arm or bracket 67 which terminates in an extension 68 arranged to form a movable wall or continuation of a coin chute 69. The front wall of casing 66 has a coin entrance slot 70 through which a deposited coin rolls down the chute 69 until it strikes the projecting shoulder 71. As shown in Fig. 1, the deposited coin 72 is supported in upright position between the fixed shoulder 71 and the extension 68 of the movable arm or bracket 67. A plunger 73, which may be a flat bar or plate, is slidably mounted in a horizontal housing 74 arranged in vertical alignment with the coin chute 69. The plunger 73 has an extension 75 which passes through a chamber 76 and terminates in a push button 77. An expanding coil spring 78 in chamber 76 bears against a disk 79 on extension 75 and holds the plunger 73 in extreme outer position, as illustrated in Fig. 1. When the plunger 73 is pushed in after the deposit of a coin, the nose 80 at the rear end of the plunger engages the edge of coin 72 and pushes the latter rearward, at the same time moving the arm 67 and all connected parts in the same direction. In other words, the deposited coin 72 forms a temporary mechanical connection between the hand-operated plunger 73 and the valve 48, whereby the latter is moved into open position when the knob or button 77 is pushed in. Just before the plunger 73 reaches the end of its rearward movement, the cam edge 81 forces the coin 72 downward out of engagement with the shoulder 71 and the upper end 68 of the movable arm 67. Being thus deprived of its support, the coin 72 drops out of the coin chute 69 to the bottom of the casing 66. The coin chute 69 terminates in a lateral discharge end 82, which guides the coin away from the movable parts of the mechanism. The bottom of casing 66 may be hinged or otherwise movable to give easy access to the deposited coins by an authorized person. A suitable lock 83 normally closes the casing against tampering.

When the discharge valve 48 is opened by the inward movement of plunger 73 after the deposit of a coin, the flap valve 62 is opened by the sucking action of the piston 52, so that the discharge valve 48 is quickly opened without opposition. However, after the coin 72 has been discharged during the final inward movement of plunger 73, the air intake valve 62 is automatically closed, and the return movement of valve 48 to normal position is retarded by the air in chamber 60. This air gradually escapes to the atmosphere through the air bleed 63, which is so adjusted that a predetermined quantity of liquid flows into the receiver 17 before the valve 48 is closed against its seat 56 by the coil spring 54. The recess 16 in the base of stand 10 acts as a guide for the correct positioning of the cup or glass 17 beneath the discharge end of pipe 49.

The spherical vacuum jar J may contain any suitable liquid to be dispensed, either hot or cold, such as coffee, orangeade, lemonade and so forth. If the apparatus is to be used for free dispensing (like a water cooler in an office), the parts 68 and 73 are permanently connected in any practical way, so that no coin is necessary to fill the receiver 17. The top opening of jar J is closed by a stopper 84, which may be cork, rubber and the like. The stopper 84 is attached to a sheet metal cap 85, which is shaped to fit over the extension 29 of casing C. A hand knob 86 has a screwthreaded extension 87 fitting into the stopper 84, which is thereby rigidly connected to the cap 85. An air vent 88 in stopper 84 and cap 85 permits the free flow of liquid out of the jar when the valve 48 is open.

Although we have shown and described a specific construction, we want it understood that our invention is not limited to the details set forth. In the broader aspect of this invention, any other suitable form of vacuum jar may be combined with any other practical coin-controlled device. For example, we may use a cylindrical or bottle-shaped jar supported in upright or inverted position. Changes and modifications in the apparatus will probably occur to those skilled in the art without departing from the scope of our invention as defined in the appended claims.

We claim as our invention:

1. Liquid dispensing apparatus comprising a double-walled vacuum jar substantially spherical in shape and having diametrically opposite openings at the top and bottom, an outer casing in which said jar is supported in upright position, a discharge pipe connected to the bottom opening of said jar and extending out of said casing, and a valve for controlling said discharge pipe.

2. In liquid dispensing apparatus, the combination of a spherical metal casing, a spherical double-walled vacuum jar of glass mounted in said casing, said jar having double-walled tubular extensions arranged diametrically opposite to form top and bottom openings, heat-insulating means in said casing for firmly supporting said jar at the top and bottom in upright position out of contact with the metal of said casing, and a discharge pipe connected to said lower opening.

3. Liquid dispensing apparatus comprising a double-walled vacuum jar substantially spherical in shape and having diametrically opposite openings at the top and bottom, an outer casing in which said jar is supported in upright position, an elastic bushing supported in the bottom opening of said jar, a tube carried by said bushing, a discharge pipe connected to said tube and extending out of said casing, and means for controlling said discharge pipe.

4. In liquid dispensing apparatus, the combination of a container having a neck at the top and a discharge opening at the bottom, a pipe connected to said discharge opening, a slidable valve in said pipe, a dash pot operated by said valve to retard the return of the valve to closing position, whereby a predetermined quantity of liquid is discharged at each operation of the device, and means for manually opening said valve.

5. Liquid dispensing apparatus comprising a jar having diametrically opposite openings at the top and bottom, an outer casing in which said jar is supported in upright position, a discharge pipe connected to the bottom opening of said jar and extending out of said casing, a hand-operated valve in said discharge pipe, and means for timing the return movement of said valve to cause a predetermined quantity of liquid to be discharged at each operation of the valve.

6. In liquid dispensing apparatus, the combination of a spherical casing having an opening at the bottom and a tubular extension on top, said extension being provided with an annular flange defining an opening, a non-metallic annular member held in said extension, a spherical double-walled vacuum jar having a neck fitting firmly in said annular member, said jar having a tubular projection at the bottom extending through the bottom opening of said casing, a non-metallic ring interposed between the adjacent bottoms of the casing and the jar, and a discharge pipe connected to said tubular projection.

7. In liquid dispensing apparatus, the combination of a spherical casing having an opening at the bottom and a tubular extension on top, said extension being provided with an annular flange defining an opening, a non-metallic annular member held in said extension, a spherical double-walled vacuum jar having a neck fitting firmly in said annular member, said jar having a tubular projection at the bottom extending through the bottom opening of said casing, a non-metallic ring interposed between the adjacent bot-

toms of the casing and the jar, an elastic bushing adjustably mounted in the bottom projection of said jar, and a discharge pipe connected to said bushing.

8. Liquid dispensing apparatus comprising a double-walled vacuum jar substantially spherical in shape and having diametrically opposite openings at the top and bottom, an outer casing in which said jar is supported in upright position, an elastic bushing supported in the bottom opening of said jar, a tube mounted in said bushing and having a flange at one end, the other end of said tube being screwthreaded outside, a nut mounted on the screwthreads of said tube, whereby the tightening of said nut expands said bushing radially against the wall of said opening to make an airtight joint, a discharge pipe connected to the lower end of said tube and extending out of said casing, and an operable valve in said discharge pipe.

9. In liquid dispensing apparatus, an outer spherical casing comprising a pair of hemispherical sections separably connected along an equatorial line, a stand projecting downwardly from the lower section, a spherical double-walled vacuum jar in said casing, said jar being provided with tubular extensions arranged diametrically opposite to form an upper inlet opening and a lower discharge opening, a non-metallic member at the bottom of said casing for supporting said jar, a non-metallic member at the top of said casing for engaging the upper tubular extension of jar, whereby the latter is firmly supported out of contact with said casing, a valve-controlled discharge pipe connected to the lower extension of said jar, and a removable stopper fitting into said upper extension.

10. In liquid dispensing apparatus, an outer spherical casing comprising a pair of hemispherical sections separably connected along an equatorial line, a stand projecting downwardly from the lower section, a spherical double-walled vacuum jar in said casing, said jar being provided with tubular extensions arranged diametrically opposite to form an upper inlet opening and a lower discharge opening, a non-metallic member at the bottom of said casing for supporting said jar, a non-metallic member at the top of said casing for engaging the upper tubular extension of said jar, whereby the latter is firmly supported out of contact with said casing, a valve-controlled discharge pipe connected to the lower extension of said jar, a housing attached to the lower part of said casing, and hand-operated mechanism in said housing for actuating said valve to deliver a measured quantity of liquid at each operation.

11. In liquid dispensing apparatus, the combination of a heat insulated jar having an outlet, and automatically timed valve mechanism for controlling said outlet to discharge a measured quantity of liquid.

12. In liquid dispensing apparatus, the combination of a heat-insulated jar having an outlet at the bottom, a discharge pipe connected to said outlet, and timed valve means for controlling said pipe to discharge a measured quantity of liquid.

13. In liquid dispensing apparatus, the combination of a jar having an outlet, and valve-operated mechanism for controlling said outlet, said mechanism including a valve adapted to close after a definite time interval, whereby a predetermined quantity of liquid is discharged at each operation of the mechanism.

14. In liquid dispensing apparatus, the combination of a double-walled vacuum jar supported in substantially vertical position, said jar having an outlet at the bottom, a discharge pipe connected to said outlet, a valve in said discharge pipe, and mechanism for automatically closing said valve after a definite time interval.

15. In liquid dispensing apparatus, the combination of a container jar having an outlet at the bottom, a discharge pipe connected to said outlet, a valve for controlling said pipe, and a dash pot connected to said valve for timing the return movement thereof, whereby a predetermined quantity of liquid is discharged at each operation of the valve.

AURIN E. PAYSON.
MINER P. WETMORE.