Feb. 10, 1953 E. D. IDZI 2,628,009

TAP BOX

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Fig. 1.

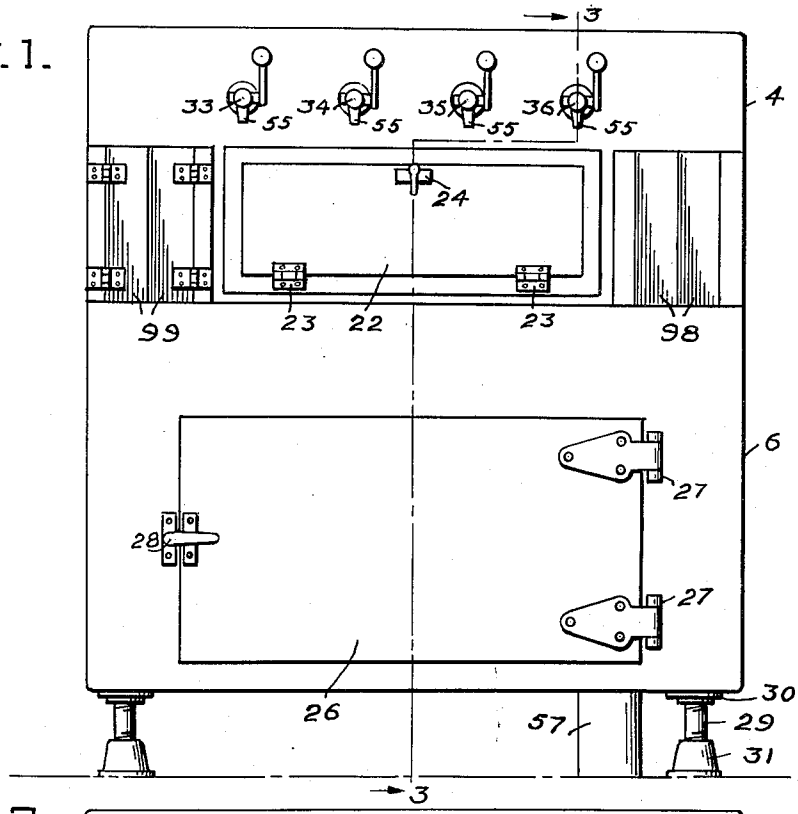
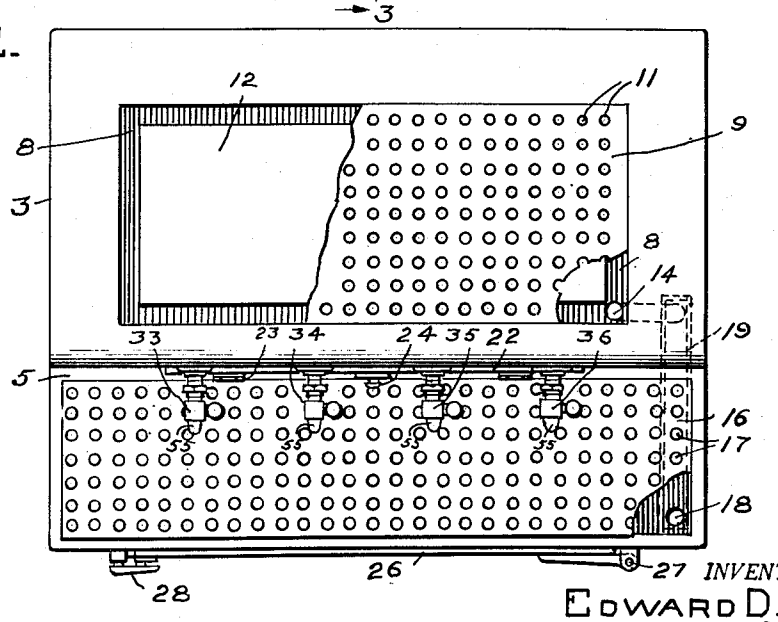


Fig. 2.



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Fig. 3.

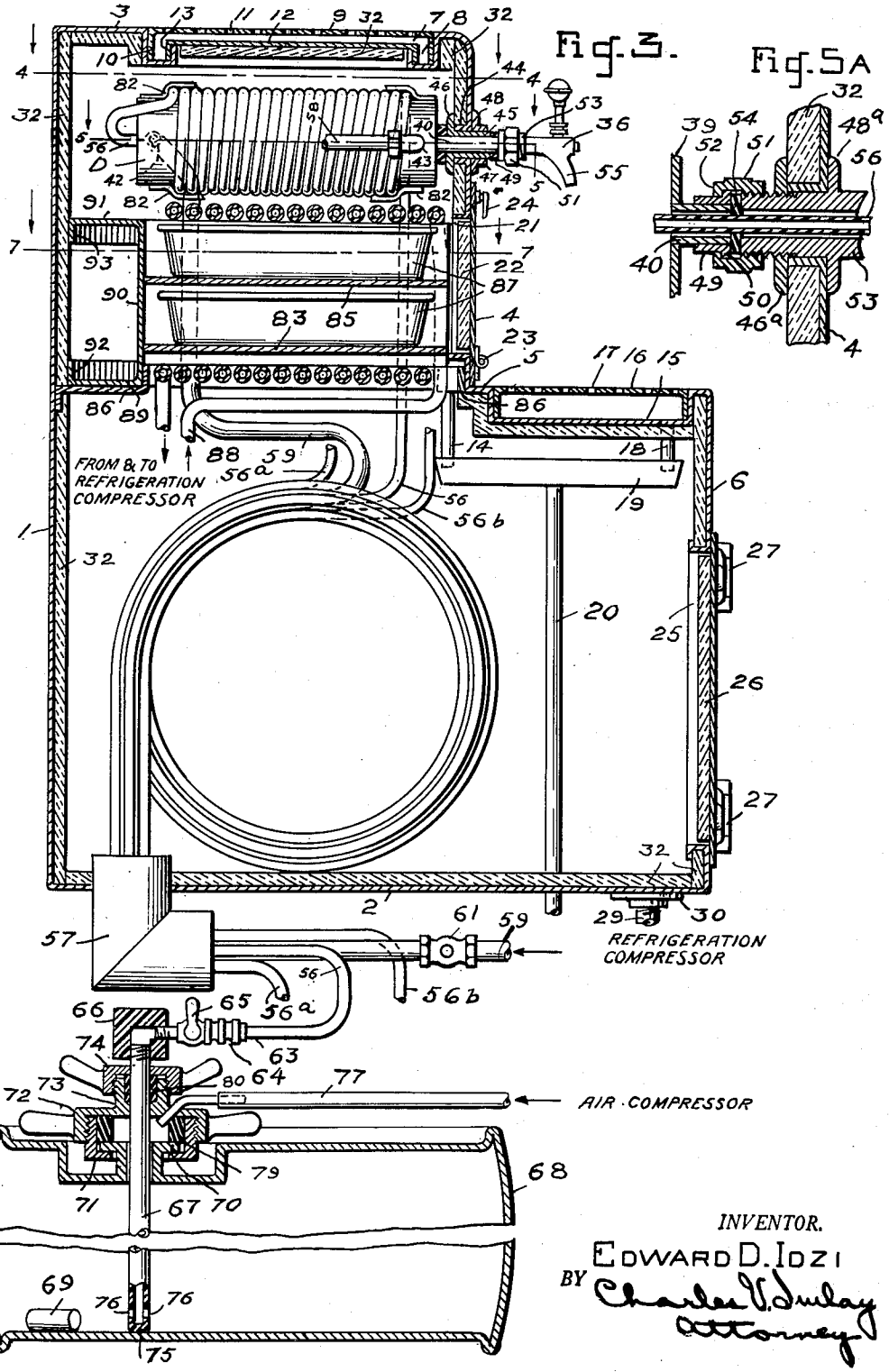


Fig. 5A

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Fig. 4.

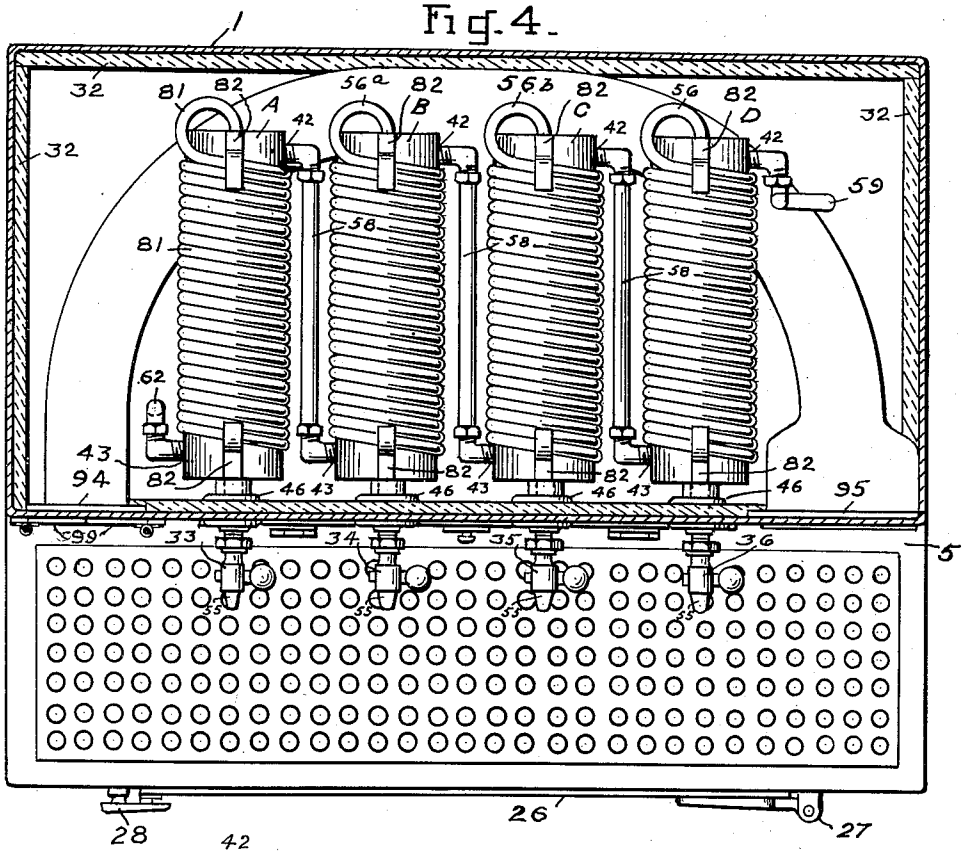


Fig. 5.

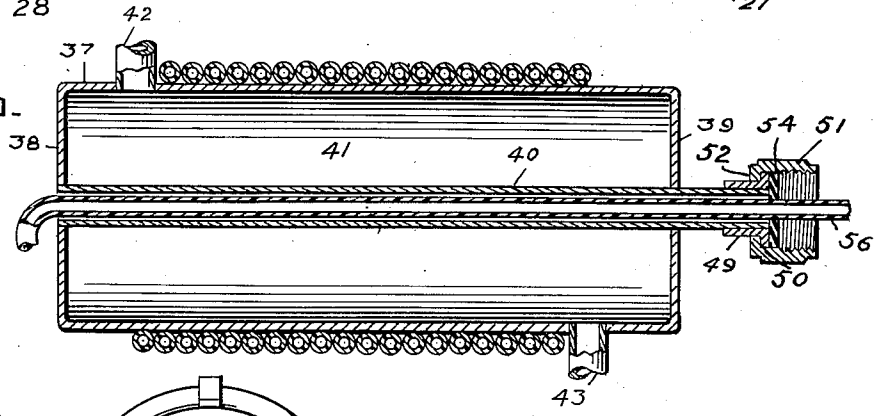
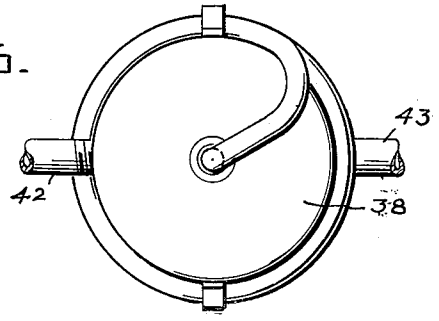


Fig. 6.



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Fig. 7.

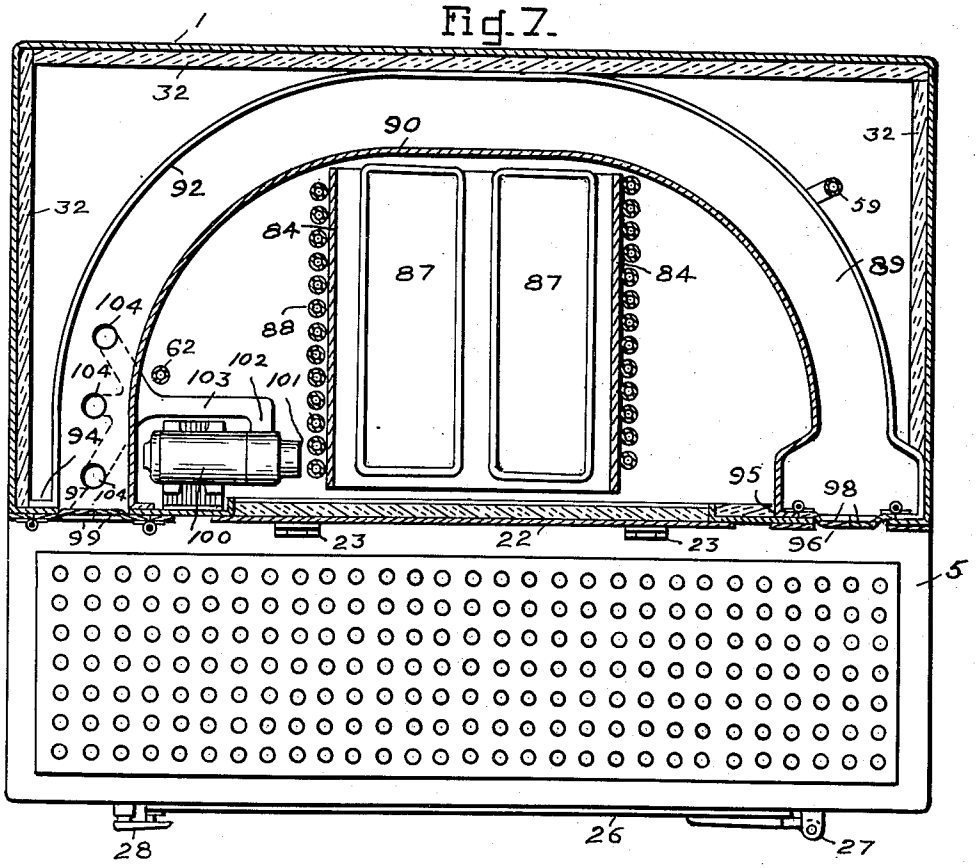
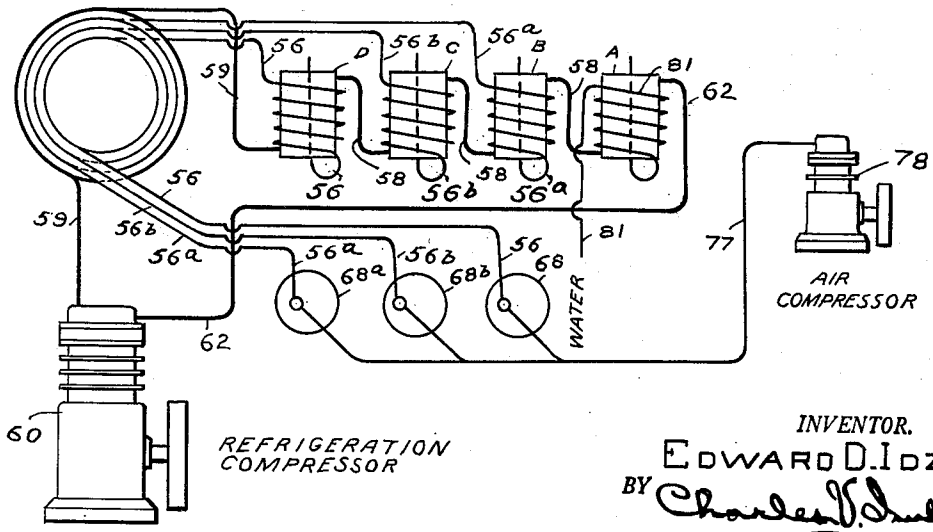


Fig. 8.



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UNITED STATES PATENT OFFICE

2,628,009

TAP BOX

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Application September 15, 1947, Serial No. 774,138

6 Claims. (Cl. 225—40)

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My invention consists in a new and useful improvement in tap boxes and is designed to provide improved apparatus for chilling and dispensing draught beer tapped from kegs. The particularly novel and useful features of my improved device are the non-metallic composition beer conduits composed of a suitable plastic, such as Lucite, with suitable coupling means of the same composition for connecting the conduits to the kegs and by which the beer is conducted from the keg to the dispensing faucet entirely free of any contact with metal; the novel refrigeration system by means of which the temperature of the beer is reduced to the desired degree by being subjected to the effect of a refrigerant throughout the entire course of flow from the keg to the faucet; novel chilling units through which the beer flows immediately prior to reaching the faucets; novel mounting means by which the chilling units, beer conduits and faucets are disposed in the tap box; a freeze box for making ice, associated with the chilling units; and a beer glass trackway associated with the freeze box and having a blower for chilling the glasses passed therealong.

While I have illustrated in the drawings and have hereinafter fully described one specific embodiment of my invention, it is to be distinctly understood that I do not consider my invention to be limited to said specific embodiment, and that I refer for its scope to the claims appended hereto.

In the drawings:

Fig. 1 is a front elevation of the improved tap box.

Fig. 2 is a top plan of the box, with parts broken away.

Fig. 3 is an enlarged transverse vertical section of the box, on the line 3—3 of Fig. 1 in the direction of the arrows, and a longitudinal vertical section of a beer keg, and the conduits leading to the box.

Fig. 4 is an enlarged horizontal section on the line 4—4 of Fig. 3 in the direction of the arrows.

Fig. 5 is a greatly enlarged horizontal section on the line 5—5 of Fig. 3 in the direction of the arrows.

Fig. 5a is a fragmentary vertical section, similar to the right end of Fig. 5, of a modified form of mounting for the chilling unit.

Fig. 6 is a greatly enlarged end elevation of the chilling unit of Fig. 3.

Fig. 7 is an enlarged horizontal section on the line 7—7 of Fig. 3 in the direction of the arrows.

Fig. 8 is a diagrammatic view of the refrigeration, beer and water conduits.

As illustrated in the drawings, my improved tap box (Fig. 1) has a rear wall 1, bottom 2, a top 3, an upper front wall 4, a front shelf 5, and a lower front wall 6. The top 3 has a central opening 7

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with a peripheral gutter 8. A cover 9 for the opening 7 has a peripheral skirt 10 seated in the outer periphery of the gutter 8, perforations 11 and a drip plate 12 below the perforations 11 and having a peripheral skirt 13 seated in the inner periphery of the gutter 8. The gutter 8 has a drain pipe 14 (Figs. 2 and 3). The shelf 5 has a depending drip plate 15 provided with a removable cover plate 16 having perforations 17. The plate 15 has a drain pipe 18 discharging into a trough 19, into which the drain pipe 14 also discharge, and having a drain pipe 20 passing downwardly and through the bottom 2 to any suitable disposal means. The upper front wall 4 (Fig. 3) has a central opening 21 closed by a door 22 with hinges 23 and a latch 24. The lower front wall 6 has an opening 25 closed by a door 26 with hinges 27 and latch 28. The bottom 2 is provided at each of its four corners with an adjustable supporting leg comprising a threaded post 29 having its upper end tapped into a socket 30 bolted to the bottom 2 and a conical base 31 threaded on the post 29.

The tap box is provided throughout its interior with suitable insulating packing 32.

Suitably mounted forwardly of the upper front wall 4, there are four faucets 33, 34, 35 and 36 disposed a convenient distance above the perforated cover plate 16 of the shelf 5 (Figs. 1, 2 and 3). Four chilling units A, B, C and D (Fig. 4) are associated with the faucets 33, 34, 35 and 36, respectively. As these units are identical in construction, a description of the structural elements of unit D (Figs. 3, 4, 5 and 6) will suffice. The unit comprises a cylindrical wall 37 with integral end walls 38 and 39 in which is mounted an axial pipe 40, to form a closed chamber 41 having an inlet port 42 and an outlet port 43.

For mounting the units A, B, C and D and the faucets 33, 34, 35 and 36, the front wall 4 has four suitably disposed bores, the wall 4 being flanged-in to provide peripheral seats 44 about the bores, each of which has a two-piece bushing comprising a male member 45, with flange 46, threaded into a female member 47 with flange 48, the flanges 46 and 48 engaging the packing 32 and the wall 4 about the bore, respectively. The pipe 40 of unit D projects through end wall 39 and passes through the male member 45 of the bushing. A sleeve 49 is fixed on the outer end of pipe 40 after it has been passed through member 45. The inner end of sleeve 49 bears on the outer end of member 45 and the outer end of sleeve 49 has a peripheral flange 50. A threaded nut 51 has a flange 52 about sleeve 49 which bears on flange 50 when the nut 51 is set up on the inner threaded end 53 of the faucet 36 and a suitable washer 54 effects a sealed joint.

The outer discharge end 55 of the faucet 36 has connected thereto the outer discharge end of a

conduit 56 which passes from the faucet 36 through the pipe 40 to the rear end of the chilling unit D whence it coils about wall 37 of the chamber 41 in a spiral path to the front end of the unit D, whence it passes downwardly into the lower portion of the tap box where it may be coiled, and then passes through an insulated conduit 57 in the bottom 2.

The chambers 41 of the units A, B, C and D are connected in series by pipes 58 (Fig. 4) connecting the inlet and discharge ports 42 and 43. The inlet port 42 of chamber 41 of the unit D has connected thereto a refrigerant conduit 59 extending from the refrigeration compressor 60 (Fig. 8) through the insulated conduit 57, coiled in the lower portion of the box, and then extending upwardly to the unit D. Conduit 59 is provided with a suitable expansion valve 61. The discharge port 43 of the chamber 41 of the unit A has connected thereto a return refrigerant conduit 62 (Figs. 4, 7 and 8) extending to the compressor 60.

The conduit 56 connected to the faucet 36 is composed of suitable non-metallic, plastic composition, such as lucite. Its lower end 63 (Fig. 3) is tapped into a coupling 64 connecting the conduit 56 with a control valve 65 threaded into a hollow head 66 into which is threaded a hollow tap rod 67 for tapping the keg 68 which has the usual bung hole closed by the bung 69, and having a slotted peripheral flange 70 to receive, in a bayonet-joint, the collar 71 of a clamp 72 having a socket 73 on which is threaded a clamp 74. The rod 67 has a closed lower end 75 and intake openings 76 adjacent thereto. A conduit 77 connected to an air compressor 78 (Fig. 8) is introduced through clamp 72 for passage of air under pressure through the bung hole.

It is to be understood that the coupling 64, the valve 65, the head 66 and the rod 67 are composed of the same material as the conduit 56.

Suitable rubber washers 79 and 80 are provided in the clamps 72 and 74, respectively, to effect sealed joints.

It will be noted (Figs. 3 and 4) that units B and C have conduits 56–*a* and 56–*b*, respectively, for connecting faucets 34 and 35, respectively, with kegs 68–*a* and 68–*b*, respectively (Fig. 8), similar to keg 68. Conduits 56–*a* and 56–*b* are of the same material as conduit 56. As shown in Fig. 3, the conduits 56, 56–*a* and 56–*b* and 59 may be coiled concentrically in the lower portion of the tap box, and conduits 56, 56–*a* and 56–*b* for the beer lines may be retained in intimate association with the refrigerant conduit 59, as by taping thereto.

The unit A is provided with a water conduit 81 (Fig. 8) of substantially the same form as that portion of conduit 56 which forms a part of unit D, to supply chilled water to the faucet 33.

Conduits 56, 56–*a*, 56–*b* and 81 are fixed to walls 37 of the chilling units by suitable clips 82.

The tap box is provided with a freeze box (Figs. 3 and 7) disposed directly below the chilling units and immediately rearwardly of the door 22 in the forward wall 4. This freeze box has a bottom 83, sides 84, and a shelf 85, and is supported by suitable brackets 86 on the rear wall 1 and front wall 4. The box contains four removable ice-cube trays 87 and is provided with a suitable refrigerant conduit 88 coiled about the freeze box and connected with the refrigeration compressor 60.

The tap box is provided with an arcuate track (Fig. 7) for chilling beer glasses passed therealong. This track comprises a floor 89, a vertical wall 90, a top 91, an upstanding flange 92 on the floor 89 and a depending flange 93 on the top 91 aligned vertically with the flange 92. The track is supported on the brackets 86 on the rear wall 1 and flanges 94 and 95 attached to the front wall 4. The intake end of this track is disposed adjacent an opening 96 in the wall 4 to the right of door 22 and its discharge end is disposed adjacent an opening 97 in the wall 4 to the left of door 22. The opening 96 is closed by double swinging doors 98 and opening 97 is closed by double swinging doors 99. Doors 98 open inwardly and doors 99 open outwardly. Both sets of doors are biased to closed position.

Suitably mounted on the wall 4 intermediate the freeze box and the discharge end of the glass chilling track, there is a suitable electric blower 100 having its intake 101 immediately adjacent the refrigerant conduit 88 coiled about the freeze box and its discharge 102 connected to an air duct 103 communicating with three discharge ports 104 in the floor 89 adjacent the opening 97 at the discharge end of the beer glass track.

It will be noted (Figs. 1 and 7) that the floor 89 of the beer glass track lies in the same horizontal plane as the plate 16 of the shelf 5.

From the foregoing description of the details of construction of my improved tap box, its use and operation will be obvious. It will be understood that the box will be properly disposed in a conventional bar so that its top 3 will be flush with the bar top, the adjustment of the adjustable legs serving properly to place the box. It is obvious that the kegs 68, 68–*a* and 68–*b* can be disposed as desired, either adjacent the tap box on the same floor or on a lower floor, the beer and refrigerant conduits being of suitable length.

When the clamp 72 has been applied to the keg 68, the tap rod 67 is passed downwardly through clamps 74 and 72 so that its head 75 rests on the bung 69. When blows are struck on the head 66, the rod 67 drives the bung 69 into the keg 68. The removal of the bung 69 permits the rod 67 to pass downwardly until the head 75 rests on the bottom of the keg 68. The clamp 74 is then set up to seal rod 67 therein. The conduit 56 is then attached to the valve 65 by the coupling 64. The conduits 56–*a* and 56–*b* are connected to kegs 68–*a* and 68–*b*, respectively, in the same manner. It is obvious that by the use of any suitable manifold header (not shown) the conduits 56–*a* and 56–*b* can be connected to keg 68 so that beer from a single keg can be dispensed from all three faucets 34, 35 and 36. When the refrigerant is circulated by the refrigeration compressor 60 through the conduit 59, its passage through the chambers 41 of the units A, B, C and D reduces the temperature to the desired degree.

When air under pressure is supplied by the air compressor 78 through the conduit 77 into the kegs 68, 68–*a* and 68–*b*, the beer therein is caused to flow into the beer conduits 56, 56–*a* and 56–*b*, the valves 65 being opened. The beer is thus supplied to the faucets 34, 35 and 36 and can be dispensed therefrom into beer glasses supported on the perforated plate 16 in shelf 5 below the faucets.

Empty, clean, inverted beer glasses are pushed inwardly against the doors 98 which open to admit them to the glass track, the dimensions of which are such that the inverted glasses are retained on the track by the wall 90 and the flanges 92 and 93. The floor 89 of the track is sufficiently smooth to facilitate sliding of the glasses

on their rims. When the track has been filled, it is obvious that insertion of an unchilled glass through the opening 96 will cause ejection of a chilled glass through the opening 97, the doors 99 yielding to permit its passage to the plate 16.

The freeze box can be caused to produce ice cubes in the trays 87 inserted by opening door 22 to rest on bottom 83 and shelf 85, by passing the refrigerant by the refrigeration compressor 60 through the conduit 88.

To suitably reduce the temperature of the beer glasses immediately prior to their ejection from the track, the blower 100 may be used to force the air of low temperature about the conduit 88 surrounding the freeze box through ports 104 to rise into the glasses passing thereover.

It is to be noted (Fig. 3) that the refrigerant conduit 59 becomes intimately associated with the beer conduits 56, 56–*a* and 56–*b* closely adjacent the kegs 68, 68–*a* and 68–*b* in order that the beer be subjected to the chilling effect immediately upon leaving the kegs. It is also to be noted that immediately upon their association the conduits are protected by insulated conduit 57 and are received into the tap box in which the temperature has been properly reduced by the refrigerant in conduits 59 and 88.

A modified form of mounting for the chilling units is illustrated in Fig. 5–*a*. In this modified form the inner end 53 of the faucet 36 has a fixed peripheral flange 48–*a* and threaded thereon an adjustable collar 46–*a*. When this form of mounting is used, the two-piece bushing 45—47 is eliminated. The inner end 53 of the faucet 36 is passed through seat 44 in wall 4 until the flange 48–*a* engages wall 4. The collar 46–*a* is set up on end 53 to engage the packing 32, thereby fixedly mounting the faucet 36 on the wall 4. The nut 51 is then set up on end 53 thus coupling sleeve 49 and its pipe 40 to the faucet 36, thereby supporting the unit D on the faucet 36.

Having described my invention, what I claim is:

1. In a device for chilling and dispensing liquid, the combination of a tank for a refrigerant having an inlet port and an outlet port, and a passage formed therethrough; a conduit for the liquid, having a portion coiled about said tank and another portion passed through said passage; means to pass the liquid through said conduit; and means to pass a refrigerant through said tank by supplying it through said inlet port and evacuating it through said outlet port.

2. In a device for chilling and dispensing liquid, the combination of a cylindrical wall; a pair of end walls integral with said cylindrical wall to form a closed chamber; a pipe mounted in said end walls concentric with said cylindrical wall and having a projecting portion extending from one of said end walls; a supporting medium in which said projecting portion is mounted; a flexible pipe attached to said cylindrical wall adjacent its end wall through which said projecting portion extends, coiled about said cylindrical wall to its other end wall and passed through said mounted pipe; and means for passing a refrigerant through said chamber.

3. In a tap box for chilling and dispensing beer, the combination of a wall provided with a bore; a pipe passed through said bore and supported by said wall; a chamber through which said pipe passes, which is supported by said pipe interiorly of the tap box; means for passing a refrigerant through said chamber; a conduit having a portion coiled about said chamber, and another portion passing through said pipe and means to pass beer through said conduit.

4. In a tap box, the combination of a wall; a plurality of chambers mounted on said wall in said box and connected in series by pipes; a refrigerant conduit introduced into the tap box and communicating with said connected chambers to supply a refrigerant to said chambers; a second refrigerant conduit communicating with said chambers to discharge said refrigerant from said chambers; a plurality of flexible liquid conduits introduced into the tap box, wrapped about and passing through said chambers, respectively, and extending exteriorly of the tap box; said refrigerant supply conduit and said liquid conduits being intimately associated by being concentrically coiled interiorly of the tap box.

5. In a device for chilling and dispensing liquid, the combination of a cylindrical wall; a pair of end walls integral with said cylindrical wall to form a closed chamber; a pipe mounted in said end walls concentric with said cylindrical wall and having a projecting portion extending from one of said end walls; a supporting medium, said projecting portion being mounted in said medium; a flexible pipe attached to said cylindrical wall adjacent the end wall through which said projecting portion extends, coiled about said cylindrical wall to the other end wall and passed through said mounted pipe; and means for passing a refrigerant through said chamber.

6. In a tap box, the combination of a wall provided with a bore; a conduit having a threaded end portion and a flange, said portion being passed through said bore to engage said flange on the exterior face of said wall; a collar threaded on said portion and engaging the interior face of said wall when set up on said portion; a nut threaded on said portion and having an interior peripheral flange; a sleeve having an exterior peripheral flange engaged by said nut-flange when said nut is set up on said portion; a pipe on which said sleeve is fixed, coupled to said conduit when said nut is so set up; a chamber through which said pipe passes supported by said pipe; means for passing a refrigerant through said chamber; a second conduit coiled about said chamber, passing through said pipe and connected with said first conduit; and means to supply liquid to said second conduit.

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