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(56) Documents Cited

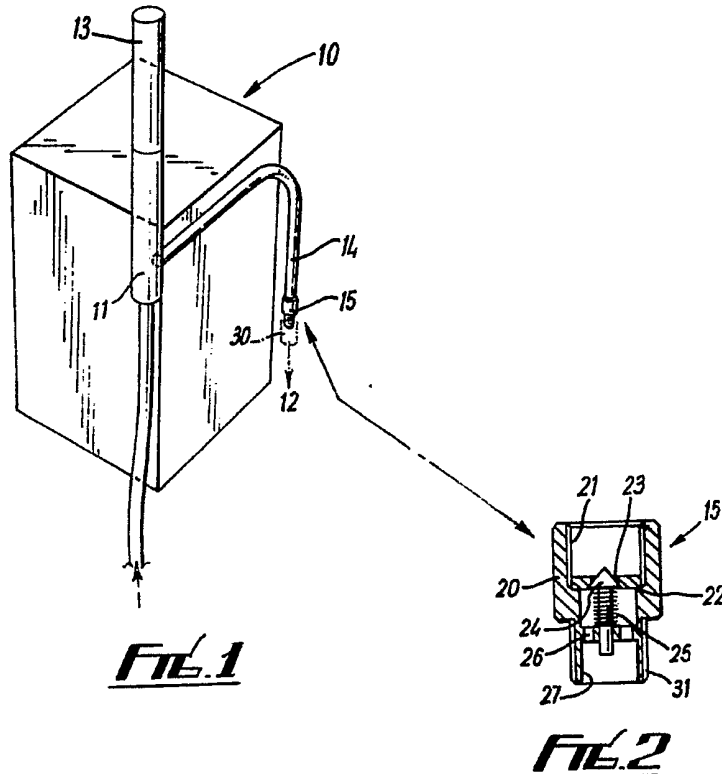
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(58) Field of Search

UK CL (Edition M) F2V VA5 VV3 VV9 VW62
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(54) Improvements in liquid dispensing apparatus

(57) Liquid dispensing apparatus 10 e.g. for beer or cider has a handle 13 for opening a valve 11 to allow liquid under pressure from a source to flow through tube 14 having outlet 12. A non-return valve 15 is associated with the outlet 12 and is opened by liquid pressure and closes to prevent dripping. The valve 15 may be associated with an agitator.



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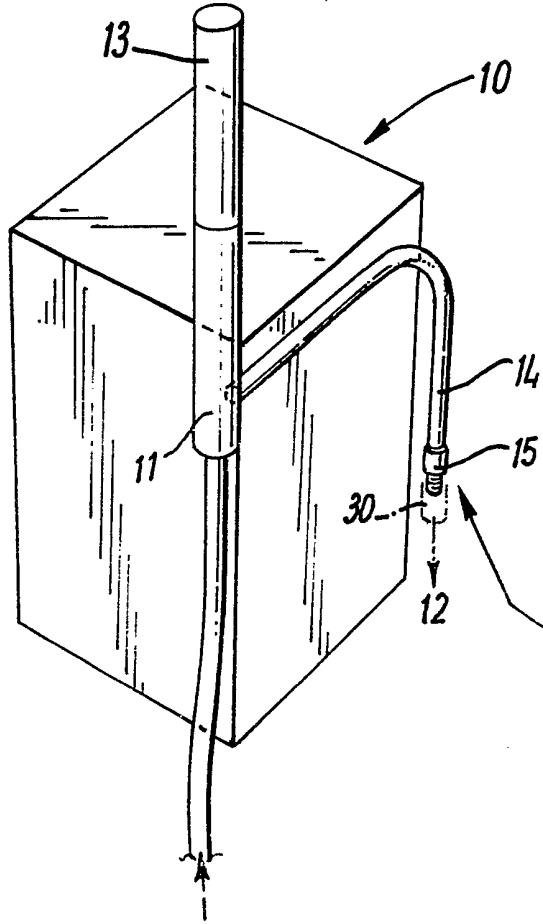


FIG. 1

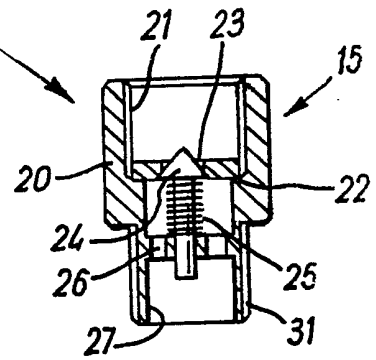


FIG. 2

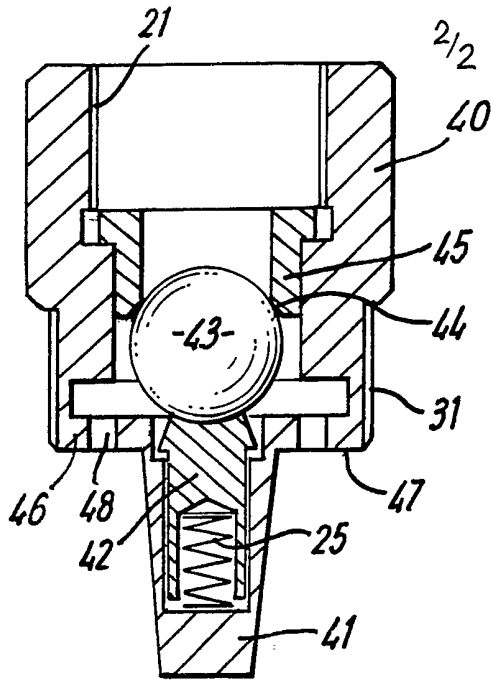


FIG. 3

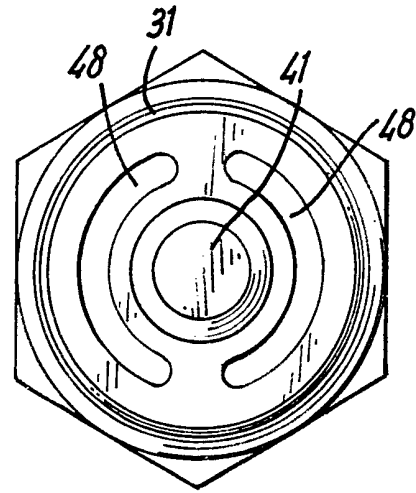


FIG. 3A

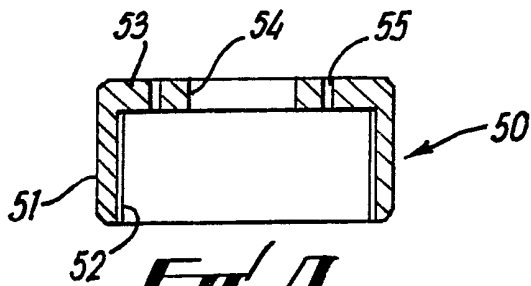


FIG. 4

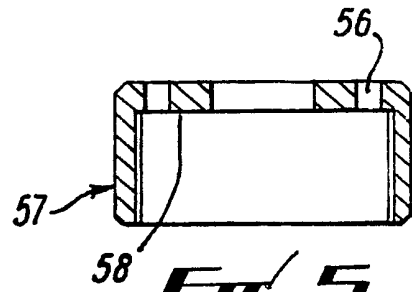


FIG. 5

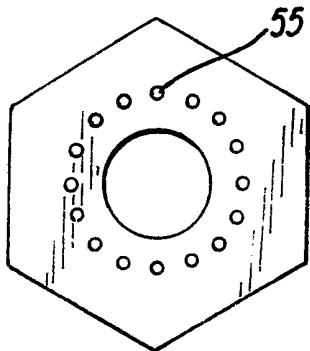


FIG. 4A

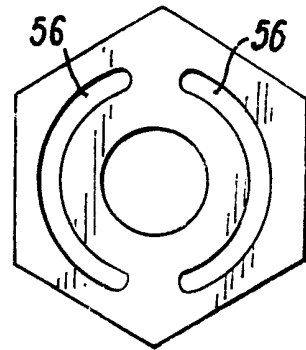


FIG. 5A

IMPROVEMENTS IN LIQUID DISPENSING APPARATUS

THIS INVENTION relates to liquid dispensing apparatus for example for beer or cider.

According to this invention liquid dispensing apparatus comprises a dispensing tube having an outlet, and a non-return valve associated with the outlet opened by pressure of liquid being
5 dispensed.

The non-return valve may include a valve member biased by a spring to a closed position.

The outlet tube may have a downwardly directed outlet.
10 The non-return valve may be in an agitator for the dispensed liquid.

An agitator for liquid being dispensed may be removably attached to a housing for a movable valve member of the non-return valve.

The non-return valve may comprise outlet aperture means
15 and the agitator may comprise passage means larger in number and smaller in area than the outlet aperture means.

The apparatus may comprise a further valve for controlling flow of liquid to be dispensed and manually operable means for closing and opening the further valve.

The apparatus may comprise a cylinder for liquid to be dispensed communicating with the tube, and a piston movable in the cylinder for moving liquid from the cylinder into the tube.

The invention may be performed in various ways and two
5 specific embodiments with possible modifications will now be described by way of example with reference to the accompanying diagrammatic drawings, in which:

Fig. 1 is a view of a dispensing device;

Fig. 2 is a section through a valve;

10 A liquid dispensing device 10 for example for beer or cider includes a valve 11 for controlling flow of liquid under pressure from a source (not shown) to an outlet 12. The valve 11 can for example be operated manually by a handle member 13. The outlet 12 is at the end of a downwardly directed tube 14. In an alternative
15 arrangement, movement of the member 13 is arranged to move a piston in a cylinder to draw liquid from a non-pressurised source and deliver the liquid to the outlet 12.

In the present case a non-return valve 15 is provided. This is at or adjacent to the outlet 12 and in the form shown is
20 made of inert plastics 19. In Figs 1, 2 the valve 15 has a housing 20 provided at one end with an internally threaded bore 21 for threaded engagement on the end of the tube 14. An inwardly

directed flange 22 provides a central aperture 23 which is closed by a valve member 24 biased to the closed position by a spring 25 which engages an apertured spider 26 in an outlet bore 27.

Operation of the member 13 to open the valve 11, or
5 move the piston, enables pressure of the liquid in tube 14 to open the valve 15 by moving the valve member 24, against the bias of spring 25. When the valve 11 is closed, or movement of the piston ceases, the non-return valve 15 closes because the liquid pressure in tube 14 no longer overcomes the bias of spring 25 and liquid in the tube 14 is
10 prevented from being dispensed, avoiding siphoning for example.

In known beer dispensers, the tube 14 may contain beer waiting to be dispensed. This may warm producing expansion of internal gas causing undesirable dripping. Valve 15 resists this.

The invention may be applied to other dispensers under
15 pressure for example water dispensers for making tea or coffee.

The housing 20 may be arranged to receive a so-called sparkler or agitator 30 e.g. the housing 20 may have external threads
31.

Alternatively the housing 20 may be shaped to act also
20 as a sparkler so that the valve 15 is in effect inside the sparkler.

In the arrangement of Figs. 3, 3A a housing 40 has threads 21, 31 and includes hollow central extension 41 which receives

spring 25 located in axially movable member 42 which is curved at one end to receive a ball 43. In the closed position shown, the ball 43 is sealingly biased by the spring 25 into engagement with chamfered end 44 of element 45. The element 45 is inserted by
5 being forced along threads 21 and is held in place by engagement with the threads 21 and housing 40.

A flange 46 with end face 47 includes opposed arcuate slots 48. In use, when the valve 11 is opened or the piston moves, liquid pressure displaces ball 43 away from seat 44 and liquid flows
10 past the ball 43 and out through slots 48.

Figs. 4, 4A and 5, 5A show two examples of suitable sparklers.

In Figs 4, 4A a sparkler 50 is cup-shaped with wall 51 internally threaded at 52 for co-operation with threads 31 an end
15 flange 53 has a central aperture 54 for receipt of extension 41 and a ring of apertures 55. In use, liquid flows through apertures 48, 55 and 54 and the effect is to agitate the liquid causing, in the case of beer, a so-called head to form on the beer dispensed into, for example, a glass. The aggregate area of apertures 55 is less than the
20 aggregate area of slots 48.

In the case of Figs. 5, 5A the sparkler 7 has apertures 55 replaced by two arcuate slot 56 which are fully laterally spaced from slots 48 so that if sparkler 57 is fully threaded onto housing 40,

the bottom face 58 engages face 47 with no overlap between slots 48, 56, although closure of ball 43 on seat 44 prevents liquid flow. The slots 56 produce less agitation than apertures 55 and may be such that in the case of beer no or little head is produced on the
5 dispensed beer.

CLAIMS

1. Liquid dispensing apparatus comprising a dispensing tube having an outlet and a non-return valve associated with the outlet opened by pressure of liquid being dispensed.
2. Apparatus as claimed in Claim 1, in which the non-return
5 valve includes a valve member biased by a spring to a closed position.
3. Apparatus as claimed in Claim 1 or Claim 2, in which the outlet is directed downwards.
4. Apparatus as claimed in any preceding claim, in which the non-return valve is in an agitator for the dispensed liquid.
- 10 5. Apparatus as claimed in any of Claims 1 to 3, in which an agitator for liquid being dispensed is removably attached to a housing for a movable valve member of the non-return valve.
6. Apparatus as claimed in Claim 4 or Claim 5, in which the non-return valve comprises outlet aperture means, and the
15 agitator comprises passage means larger in number and smaller in area than the outlet aperture means.
7. Apparatus as claimed in Claim 6, in which the total area of the outlet aperture means is more than the total area of the passage means.

8. Apparatus as claimed in any preceding claim, comprising a further valve for controlling flow of liquid to be dispensed, and manually operable means for closing and opening the further valve.

9. Apparatus as claimed in any preceding claim, comprising
5 a cylinder for liquid to be dispensed communicating with the tube, and a piston movable in the cylinder for moving liquid from the cylinder into the tube.

10. Liquid dispensing apparatus substantially as hereinbefore described with reference to and as shown in Figs. 1 and 1; or Figs. 3,
10 3A; or Figs. 4, 4A; or Figs. 5, 5A; of the accompanying drawings.

Relevant Technical Fields

- (i) UK Cl (Ed.M) F2V (VA5, VV3, VV9, VW62)
(ii) Int Cl (Ed.5) B67D 1/12, 1/14, 3/02, 5/34, 5/377; F16K
15/00, 15/02, 15/04, 15/06

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE DATABASES: WPI

Search Examiner
ALEX LITTLEJOHN

Date of completion of Search
27 JULY 1994

Documents considered relevant
following a search in respect of
Claims :-
1-10

Categories of documents

- X:** Document indicating lack of novelty or of inventive step. **P:** Document published on or after the declared priority date but before the filing date of the present application.
- Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category. **E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- A:** Document indicating technological background and/or state of the art. **&:** Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2266228 A (JEANS) see whole document, for example page 7 lines 10, 11	1, 3
X	GB 2251476 A (AEROQUIP) see whole document, for example page 4 lines 15-19	1, 2, 3
X	GB 2214612 A (OCMES) see whole document, for example page 6 line 4 to page 7 line 5	1, 2, 3, 8
X	GB 2095584 A (TETRA) see whole document, for example page 1 line 128 to page 2 line 49	1, 2, 3
X	GB 658443 (BECK) see whole document, for example page 3 lines 8 to 43	1, 2
X	US 4978036 (BURD) see whole document, for example column 3 lines 34 to 65	1, 2, 3
X	US 4669497 (TENHENGEL) see whole document, for example column 5 lines 1 to 51	1, 2, 3, 8
X	WO 86/04047 A1 (KANARVOGEL) see whole document, for example page 18 lines 8 to 37	1, 2, 3, 8

Databases:The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).