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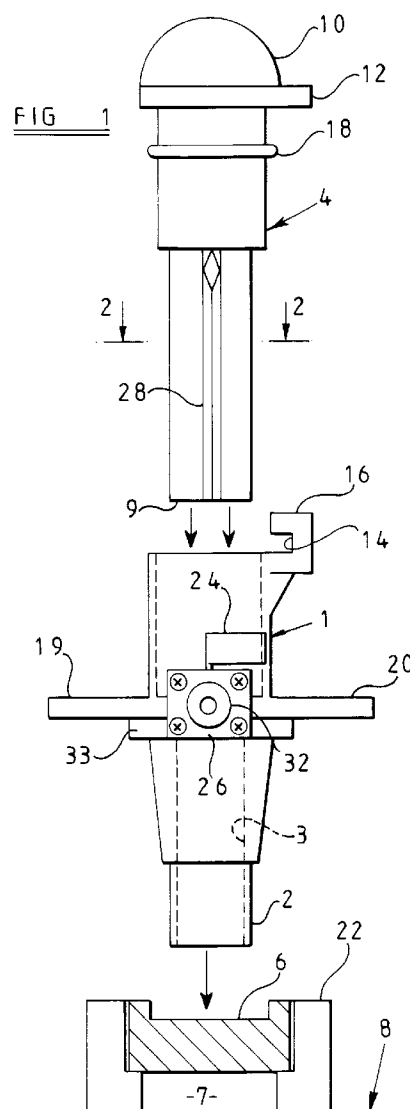
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(54) Beer cask broaching apparatus

(57) Broaching apparatus for broaching the keystone of a beer cask to permit beer to be dispensed from the cask comprises a broaching member 1 having a piercing tip 2 for piercing the keystone 6 when a suitable driving force is applied to the broaching member 1 by a rubber mallet. The broaching member 1 has a through bore 3 opening at the piercing tip 2 and providing a passage for the introduction of a supply pipe from outside the cask into the beer within the cask to permit beer to be dispensed from the cask by way of the supply pipe. A removable plug member 4 is insertable into the bore 3 for broaching of the keystone 6.



Description

This invention relates to broaching apparatus for broaching the keystone of a beer cask to permit beer to be dispensed from the cask.

Traditional methods for dispensing cask-conditioned beer make use of a supply pipe which extends through an opening in the wall of the cask or barrel and which has an input end opening in the vicinity of the bottom of the beer within the cask and an output end opening externally of the cask and connected to a tap or to a pump fitting by means of which beer may be drawn from the cask under pump pressure. Such methods can be used either with the cask standing upright or with the cask lying in a horizontal position on a traditional stillage. In either case it is conventional for the part of the cask which is uppermost in use to be fitted with an air-impermeable plug which is replaced by an air-permeable plug to admit air to the top of the cask when beer is to be dispensed.

However there are a number of disadvantages inherent in such traditional dispensing methods. The Applicants' Published International Application No. WO 95/14633 discloses and claims an improved beer dispensing system in which the input end of the supply pipe is connected to a float adapted to float in the beer within the cask in the vicinity of its free surface so as to ensure that the beer is drawn off from the vicinity of the free surface by way of the input end of the supply pipe. This not only ensures that bright, clean beer can be drawn off from the cask a much shorter length of time after the cask has been moved into position, but also improves the shelf life of the beer by virtue of the fact that the beer at the surface in contact with the air is continually being drawn off, and creates only minimal movement in the beer at the bottom of the cask with the result that the sediment settles more tightly than it would otherwise do so that the maximum amount of beer is servable from the cask. However the fitting of such a dispensing system to a cask can be difficult in view of the need to introduce the supply pipe and float into the beer within the cask.

It is an object of the invention to provide improved broaching apparatus for broaching the keystone of a beer cask to permit beer to be dispensed from the cask.

According to the present invention there is provided broaching apparatus for broaching the keystone of a beer cask to permit beer to be dispensed from the cask, the apparatus comprising a broaching member having a piercing tip for piercing the keystone when a suitable driving force is applied to the broaching member and having a through bore opening at the piercing tip providing a passage for the introduction of a supply pipe from outside the cask into the beer within the cask to permit beer to be dispensed from the cask by way of the supply pipe.

Such broaching apparatus can be used to broach the keystone in a straightforward manner, preferably by

use of a rubber mallet to apply the required driving force, and, once the keystone has been broached, provides a passage for the introduction of the supply pipe into the beer within the flask. Generally it is advantageous for the cask to be stood upright during broaching and for subsequent dispensing of beer as much less space is required for an upright cask than for a cask lying in a horizontal position on a traditional stillage. Also the dispensing of beer with the cask in the upright position avoids the need for lifting of the heavy cask on the stillage.

In order that the invention may be more fully understood, preferred beer cask broaching apparatus in accordance with the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows two parts of the broaching apparatus prior to broaching of the keystone of a beer cask;

Figure 2 shows a cross-section along the line 2-2 in Figure 1; and

Figure 3 shows two parts of the broaching apparatus after broaching of the keystone of the cask and prior to introduction of the supply pipe into the cask.

Referring to Figure 1, the apparatus comprises a broaching member 1 having a piercing tip 2 and a through bore 3 opening at the piercing tip 2, and a removable plug member 4 which is insertable into the bore 3 for broaching of a keystone 6 provided in an opening 7 in an end wall of an upright beer cask 8. When the plug member 4 is fully inserted within the bore 3 in the broaching member 1, the end 9 of the plug member 4 is located within the piercing tip 2, and the plug member 4 may be turned by means of its domed head 10 so as to cause a projecting tab 12 on the plug member 4 to be locked within a locking recess 14 in a projecting locking element 16 on the broaching member 1. Furthermore an O-ring seal 18 on the plug member 4 seals against the inside wall of the bore 3 in fluid tight manner.

In order to broach the keystone 6 the steel piercing tip 2 of the broaching member 1 is placed in contact with the centre portion of the keystone 6 with the bore 3 closed off by the plug member 4 which is firmly locked in the bore 3 by the locking element 16, and the domed head 10 of the plug member 4 is smartly hit by a rubber mallet in order to cause the piercing tip 2 to pierce the keystone 6. The piercing of the keystone 6 by the broaching member 1 should be effected with a single strike so that a reasonable force must be applied to the head 10 of the plug member 4. During this piercing operation the broaching member 1 must be held by its projecting flanges 19 and 20 so as to ensure that the flanges are parallel to the upper edge of the lip 22 of the cask surrounding the opening 7 closed off by the keystone 6, so as to ensure that the flanges 19 and 20 are clear of

the lip 22 when the broaching member 1 is fully inserted into the keystone 6 with the annular shoulder 33 engaging the lip 22.

Furthermore, during the broaching operation, a vent tap 24 provided on the broaching member 1 must be in an open position so as to open a vent valve 26 to permit fluid passing along a vent passage 28 to escape. As will be appreciated by referring to the cross-section of the plug member 4 shown in Figure 2, the vent passage 28 is formed by a longitudinal recess 28 in an outer surface of the plug member 4 which is in fluid communication with the vent valve 26 when the plug member 4 is fully inserted into the bore 3. A tube (not shown) may be connected to the outlet 32 of the vent valve 26 for collection of any escaping liquids.

Once all pressure has been released by way of the vent valve 26, that is when there is no further hissing noise denoting escape of air or liquid through the vent valve 26, the plug member 4 may be unlocked from the locking element 16 by turning and may then be drawn out of the bore 3 in the broaching member 1, leaving the broaching member 1 inserted fully within the keystone 6. It should be noted that the piercing operation will cause the central portion of the keystone 6 to be forced into the interior of the cask 8, the presence of the end 9 of the plug member 4 within the piercing tip 2 during this operation ensuring that the bore 3 is not blocked by the severed central portion of the keystone 6. A free passage is thereby provided for introduction of the supply pipe into the beer within the cask 8.

As shown in Figure 3, the supply pipe 40 (which is shown with its central portion omitted for ease of illustration) is a push fit at one end on an outlet duct 42 of a float 44 and is a push fit at the other end on an inlet duct 46 of a flow head 48 provided for connection of at least one beer line (not shown) to the supply pipe 40. When the supply pipe, with the float 44 suspended from its end, is introduced into the beer within the cask 8 by way of the bore 3 in the broaching member 1, the float 44 is caused to float in the beer in the vicinity of its free surface so that beer may be drawn off from the vicinity of the free surface through a perforated gauze tubular portion 49 of the float 44 and along the supply pipe 40 for dispensing of the beer.

When the supply pipe 40 and float 44 suspended from the flow head 48 have been passed through the bore 3 in the broaching member 1, the flow head 48 is pushed into the upper part of the bore 3 so as to cause an O-ring seal 52 provided on the flow head 48 to seal against the inside wall of the bore 3, and connection of at least one beer line to the flow head 48 may then be effected. The flow head 48 incorporates an axial passage 52 which leads into two radial passages 53 and 54. Furthermore the flow head 48 is provided with two externally screwthreaded outlet ports 55 and 56 with which the radial passages 53 and 54 communicate and to which two beer lines may be connected by internally screwthreaded connector fittings 57 and 58. If only one

beer line is to be connected to the flow head 48, the outlet port 55 or 56 which is not required should be fitted with an internally screwthreaded blanking cap (not shown).

If an aspirator, mixed gas or top pressure system is to be used, a gas pipe (not shown) may be connected to the outlet 32 of the vent valve 26 on the broaching member 1 and the vent tap 24 may be opened to allow a constant flow of gas to the beer surface. When dispensing of beer is not required over a prolonged period, the vent tap 24 may be closed.

Claims

1. Broaching apparatus for broaching the keystone of a beer cask to permit beer to be dispensed from the cask, the apparatus comprising a broaching member (1) having a piercing tip (2) for piercing the keystone (6) when a suitable driving force is applied to the broaching member (1) and having a through bore (3) opening at the piercing tip (2) providing a passage for the introduction of a supply pipe (40) from outside the cask into the beer within the cask to permit beer to be dispensed from the cask by way of the supply pipe (40).
2. Apparatus according to claim 1, characterised in that closure means (4) is provided for closing off the bore (3) through the broaching member (1) in the region of the piercing tip (2) so as to prevent a part of the keystone (6) entering the bore (3) during piercing of the keystone (6).
3. Apparatus according to claim 2, characterised in that the closure means is a removable plug member (4) which is insertable into the bore (3) during piercing of the keystone (6) and which is subsequently removable from the bore (3) to provide free passage for the introduction of the supply pipe (40).
4. Apparatus according to claim 3 or 4, characterised in that the plug member (4) is provided with a head (10) which is disposed externally of the bore (3) when the plug member (4) is inserted in the bore (3) and which is adapted to be struck by a mallet to drive the broaching member (1) through the keystone (6).
5. Apparatus according to claim 3 or 4, characterised in that locking means (12, 16) is provided for locking the plug member (4) within the bore (3) in the broaching member (1) so as to prevent the plug member (4) being forcibly ejected from the bore (3) by back pressure during piercing of the keystone (6) by the broaching member (1).
6. Apparatus according to any preceding claim, char-

acterised in that vent means (24, 26, 28) is provided for venting fluid under pressure from the cask during piercing of the keystone (6).

7. Apparatus according to any preceding claim, characterised in that the broaching member (1) is provided with an annular sealing shoulder (33) for engaging the lip (22) of the cask surrounding the keystone (6) when the broaching member (1) has been fully driven into the keystone (6). 5
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8. Apparatus according to any preceding claim, characterised in that beer line connection means (48) is provided for sealingly connecting the supply pipe (40) to at least one beer line for dispensing of beer from the cask. 15
9. Apparatus according to claim 8, characterised in that the beer line connection means is a flow head (48) which is insertable into the bore (3) after introduction of the supply pipe (40) through the bore (3) and which has a passage (52, 53, 54) extending therethrough for the supply of beer to said at least one beer line. 20
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10. Apparatus according to claim 9, characterised in that the flow head (48) is connected to the supply pipe (40) and is provided with at least one screw-threaded connector (57, 58) for detachable connection of said at least one beer line. 30

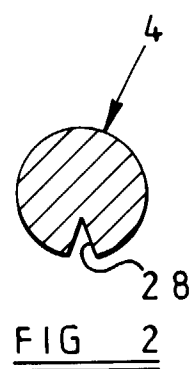
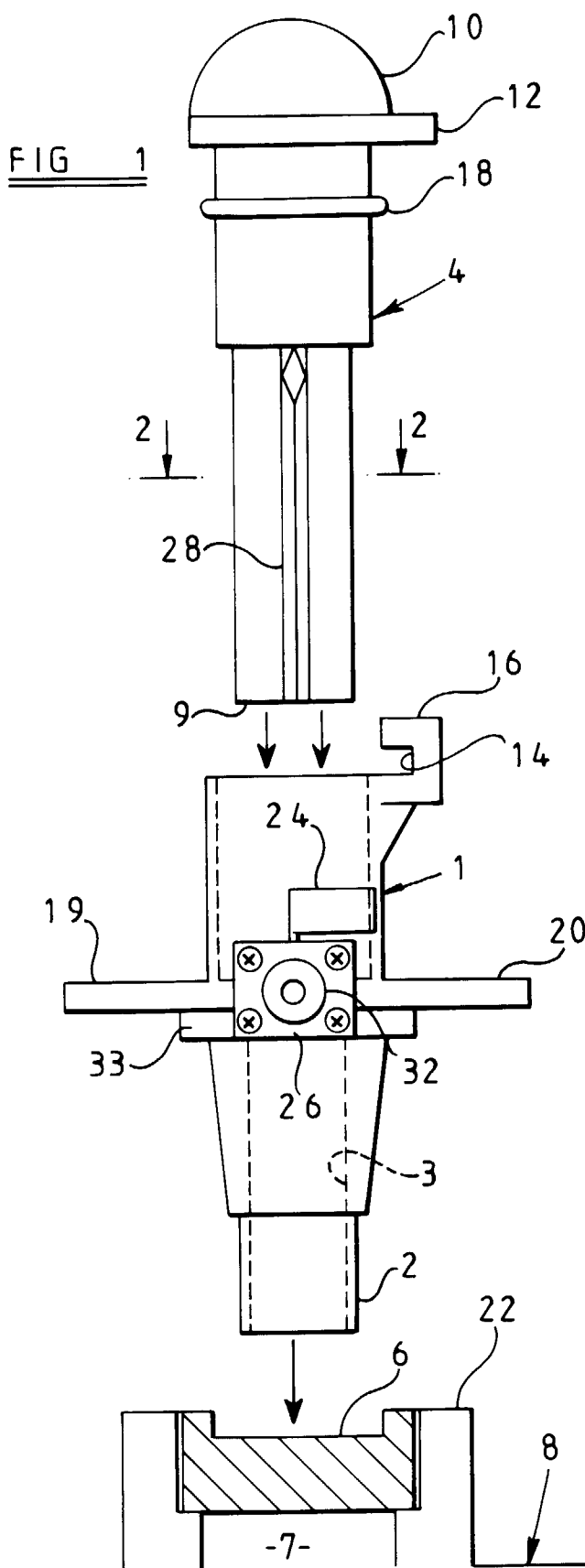
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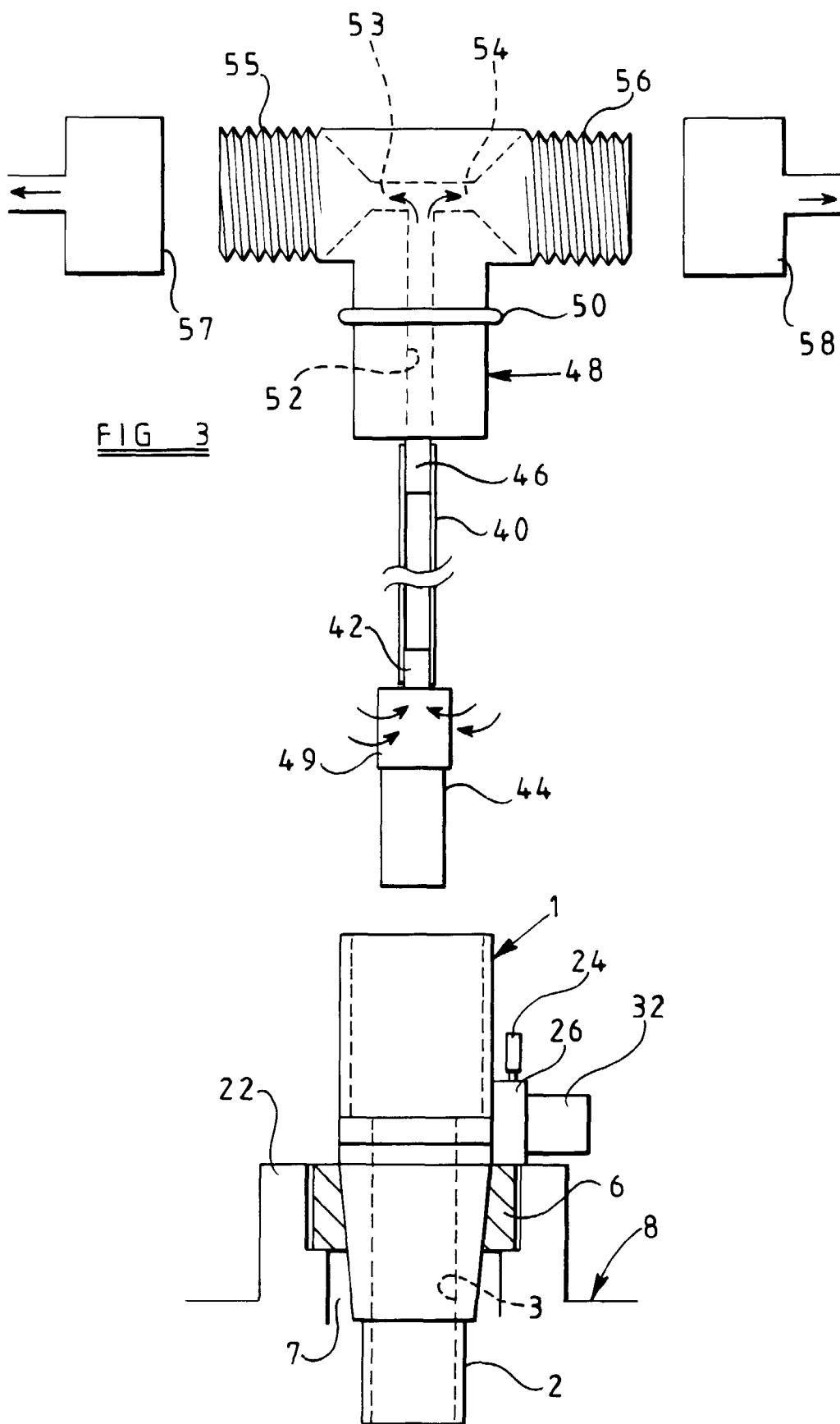
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EUROPEAN SEARCH REPORT

Application Number
EP 96 30 4587

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	US 3 545 475 A (A. JOHNSON, JR. ET AL.) * column 1, line 72 - column 3, line 14 * * figure 1 *	1,7,8	B67B7/86 B67D1/08
A	DE 22 48 860 A (K. BINDER) * page 3, line 25 - page 4, line 32 * * figures 1,3 *	1,7,8	
A	US 3 240 392 A (S. NICKO) * column 1, line 64 - column 4, line 11 * * figures 1-4 *	1,8	
A	GB 2 182 320 A (ALUMASC LIMITED) * page 1, line 95 - page 2, line 90 * * figures 1-6 *	1,8	
A	GB 2 165 531 A (KEG SERVICES LIMITED) * page 2, line 56 - line 115 * * figures 1-4 *	1,7	
A	US 3 374 927 A (P. SCHMIDT) * column 3, line 1 - column 4, line 40 * * figures 1-7 *	1,8	TECHNICAL FIELDS SEARCHED (Int.Cl.6) B67B B67D
A	GB 1 015 744 A (K. KOHANZO)		
A	DE 390 369 C (A. JUNG)		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 23 October 1996	Examiner Smolders, R
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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