



(12) **EUROPEAN PATENT APPLICATION**

(21) Application number : **94306964.1**

(51) Int. Cl.<sup>6</sup> : **B67D 1/08**

(22) Date of filing : **23.09.94**

(30) Priority : **25.09.93 GB 9319840**

(43) Date of publication of application :  
**29.03.95 Bulletin 95/13**

(84) Designated Contracting States :  
**BE DE FR GB NL**

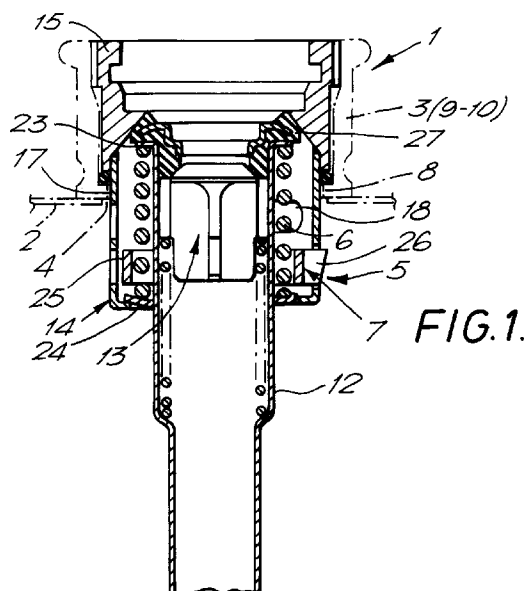
(71) Applicant : **UNIVERSAL EQUIPMENT CO  
(LONDON) LTD**  
**Belvue Works**  
**Green Lane**  
**Hounslow Middlesex TW4 6DJ (GB)**

(72) Inventor : **Cook, Robert Bernard Harwood**  
**South Ridge, St. George's Hill**  
**Weybridge, Surrey KT13 ONF (GB)**

(74) Representative : **Wilson, Nicholas Martin et al**  
**WITHERS & ROGERS**  
**4 Dyer's Buildings**  
**Holborn**  
**London EC1N 2JT (GB)**

(54) **Safety dispensing valve.**

(57) A spear valve assembly (5) has a valve body (14) for engagement with a keg neck (3) and a skirt (17) on the valve body (14) including openings (18) for the throughflow of beer during filling. A downtube assembly (12) is movable relative to the valve body (14) and the skirt (17) and includes a downtube (12) for projecting into beer in a keg. A locking member (7) is carried by the downtube assembly (12) and is arranged to project through at least one further opening (19) in the skirt. In use, the locking member (7) normally prevents the spear valve assembly (5) from being ejected from a beer keg by engagement behind the keg neck. However, for removal of the spear valve assembly (5) the downtube assembly (12) is tilted relative to the skirt (17) to retract the locking element (7).



This invention relates to a delivery device for delivering a liquid from a container to a dispenser, particularly for delivering beer from a keg, and to a safety device therefor.

In our European publication No. 0493976 we have disclosed a safety device, suitable for fitting to a keg spear valve, comprising at least one locking member which, when fitted, is movable relative to the spear valve whereby the keg spear valve may be inserted into a keg neck without disassembly, the locking member, during insertion and once through the keg neck, moving outwardly relative to the spear valve so that the locking member will prevent the spear valve from being ejected from the beer keg by residual pressure by engagement behind the keg neck.

In several embodiments in that application the safety device comprises a separate element which projects through an opening in a skirt on the valve sleeve and which is biased outwardly so that the projecting portion projects through the opening after insertion through the keg neck so as to engage behind the neck on unintentional pressurized release.

However, whilst the arrangements of our aforementioned applications work satisfactorily, there may be a problem when it comes to servicing of the spear valve. In particular, in those embodiments where the safety device comprises small separate locking pieces the locking pieces are liable to fall away from the skirt on disassembly of the spear valve for cleaning and seal replacement. This is likely to lead to the loss of locking pieces or at least the inconvenience of re-fitting the locking piece in the skirt.

An object of the present invention is to provide an improved safety device.

According to the present invention, there is provided a spear valve assembly for insertion into the neck of a beer keg including a body having a skirt portion with at least one opening therein and a downtube assembly, and a locking member carried by the downtube assembly which, after insertion of the spear valve into the keg neck, projects through the at least one opening and prevents the spear valve from being blown out of the keg by engagement behind the keg neck, the spear valve assembly only being removable from the neck of the beer keg by tilting the downtube assembly relative to the skirt to displace the locking element laterally whereby the locking element may clear the keg neck. The locking member is preferably a one-piece safety device including an annular portion which locates about the downtube assembly and at least one projection which extends through at least one opening in the skirt. In accordance with the invention there is no requirement to overstroke the downtube assembly specifically to release the locking member and a special tool is used to effect release of the locking member which preferably is distinctly different from the tapping head. Preferably the locking

element has two projections.

In a preferred arrangement, the spear valve assembly comprises a valve body for engagement with a keg neck, a skirt on the valve body including openings for the throughflow of beer during filling and at least one further opening, a downtube assembly movable relative to the valve body and skirt and including a downtube for projecting into beer in a keg, a valve co-operable with the valve body to close the keg, and spring means acting between a reaction member on the downtube and the valve biasing the valve into its closed position, and a locking member carried by the downtube assembly so as to project through the at least one further opening, in use, the locking member preventing the spear valve assembly from being ejected from a beer keg by engagement behind the keg neck, the spear valve assembly being removed from the beer keg by tilting the downtube assembly relative to the skirt to retract the locking member (7).

The invention also includes a method of converting a keg spear into a safety keg spear to prevent the spear being ejected on unintentional pressurized release, the spear including a valve body for engagement with the keg neck, a downtube assembly for projecting into beer in a keg and a valve for controlling fluid flow through the spear, and a skirt on the valve body including openings for the throughflow of beer during filling, the method comprising:

forming at least one further opening in the skirt, fitting a locking device to the downtube assembly so that a projecting portion of the locking device projects through the at least one further opening after insertion through the keg neck so as to engage behind the neck on unintentional pressurized release. Preferably, the spear valve assembly is released by means of a release tool, locating the release tool within the downtube assembly, and tilting the downtube assembly relative to the valve body to retract the locking device from the at least one further opening allowing the locking element to clear the keg neck and thereby permit the spear valve assembly to be removed from the keg. If desired, the release tool may be located by position location means, suitably a dimple or other coding means on an engagement lug on the valve body.

The invention will now be described by way of example with reference to the accompanying drawings in which:-

Figure 1 is a longitudinal sectional view of a spear valve assembly in accordance with the invention; Figure 2 is a perspective view of the valve body of the valve assembly of Figure 1;

Figure 3 is a longitudinal sectional view of the safety device of Figure 1 with a removal tool in place;

Figure 4 is a side elevation of the safety device of Figure 1 on 'A' in Figure 6;

Figure 5 is a perspective view of the skirt of the valve assembly of Figure 1;

Figure 6 is a plan view of the safety device in position with the components of the spear valve omitted for clarity; and,

Figure 7 is a longitudinal part-sectional of the safety device of Figure 1 with an alternative removal tool in place.

In the drawings a keg (1) has a body (2) and a keg neck (3) defining a mouth (4). The mouth (4) of the keg (1) is closed by a spear valve assembly (5) releasably seated within the mouth (4). In order to prevent the spear valve assembly (5) from being accidentally ejected from the keg (1) by residual pressure within the keg (1) at the time of release, the spear valve assembly (5) is provided with a safety locking element (7). The locking element (7) on the spear valve assembly (5) has an annular portion (25) and two juxtaposed projections (26) adapted to engage behind an abutment shoulder (8) on the keg neck (3).

The keg neck (3) is a hollow cylinder having a smooth inner portion (9) and a threaded inner portion (10). The abutment shoulder (8) is formed on the smooth inner portion (9) and is substantially annular extending inwardly towards the centre of the keg neck (3). The keg neck (3) is rigidly secured to the keg body (2), the smooth inner portion (9) being disposed adjacent the keg body (2). The keg neck (3) defines the keg mouth (4) and permits access to the inside of the keg (1).

The spear valve assembly (5) comprises a depending downtube (12) having a flanged top surface (23) carrying a first valve (27) through which the keg is filled. A beer valve indicated generally at (13) through which beer is dispensed is disposed within the downtube assembly (12) and a body (14) is disposed around the beer valve (13). The body (14) of the spear valve assembly (5) is substantially cylindrical and has two portions (15,17); a screw threaded body portion (15) spaced from the downtube (12); and a skirt portion (17) adjacent the downtube (12) having a lock clip (24) at its lower edge. The body portion (15) includes two inwardly directed release tangs (21) as indicated in Figure 2, one of which is identifiable by a dimple (22).

The skirt (17) has openings (18) for the through-flow of beer during filling and is additionally formed with two axial slots (19). The annular portion of the locking element (7) is located about the downtube (12) and positioned so that the two projections (26) of the locking element (7) fit into the slots (19) in the skirt portion (17). The downtube (12) is biased into an upper sealing position as shown by spring (6) in which the main seal (27) carried by the flange (23) of the downtube (12) seals against the valve body (14) and the locking element (7) is retained in the skirt (17) by being enclosed around the spring (6).

To assemble the spear valve assembly (5) into

the keg (1), the spear valve assembly (5) is inserted, downtube (12) first into the keg (1) through the keg neck (3). On insertion of the spear valve into the keg neck, the locking element (7) abuts the outer face of the shoulder (8). The spear valve (5) is then pushed downward until the locking element (7) passes through shoulder (8) by the locking element being forced inwardly. The locking element (7) is returned to its centralized position by the reaction of the spring (6) against the flange (23) and the lock clip (24) at the lower edge of the skirt (17).

Once the locking element (7) is past the shoulder (8), the screw threaded portions (10) on the keg neck (3) and (15) on valve assembly (5) respectively, threadingly engage with each other and allow the keg neck (3) and valve assembly (5) to be tightened together.

To disassemble the valve assembly (5) from the keg neck (3), the tapping head (not shown) is removed and the residual pressure in the keg (1) is evacuated by insertion of a removal tool (20) (as shown in Figure 3) which depresses the downtube (12) and releases the rubber seals (13,27) from their respective seats. The tool (20) is located and locked under the tangs (21) with an operative end of the tool being located in the downtube assembly (12). This moves the downtube assembly (12) laterally so that the locking element (7) is moved sideways through an arc as shown so as to be clear of shoulder (8) on the keg neck (3). The spear valve assembly (5) can then be unscrewed from the keg neck (3) and lifted clear of neck (3).

In Figure 7 an alternative removal tool (30) is disclosed which fits into the valve assembly (5) in place of a conventional tapping head. An operative end (31) of the tool which is inclined to the axis (32) of the valve assembly (5) is then depressed by manipulation of an operating handle (33). This causes the downtube assembly to be lifted from its seating and to be moved sideways in an arc thereby retracting the projections (26) from the slots (19). The tool (30) of Figure 7 vents and enables the valve assembly to be unscrewed from the keg neck.

In the event of an attempt to disassemble the spear valve assembly (5) without evacuating the residual pressure in the keg (1), the spear valve assembly (5) can be unscrewed from the keg neck (3) and at this point the pressure build-up in the keg (1) could cause a blow-out. However, as the valve assembly (5) is provided with the safety locking element (7), the locking element (7) will abut against the shoulder (8) preventing the spear valve assembly (5) from being blown out and allowing excess pressure to escape.

If the spear valve assembly (5) is to be disassembled for servicing, the assembly (5) is removed as disclosed above and then the individual parts of the assembly are separated. The assembly is re-aligned by removal of the tool, for further use.

The main advantages of the present invention are:

- (a) the spear valve assembly may be inserted into a keg without any special tool and complete, without partial disassembly of the spear valve assembly;
- (b) the spear valve assembly may be removed only by a unique tool thereby overcoming possible abuse because it is distinctly different from the tapping head which can be used as an overstroking tool by simple insertion of a small coin, or washer, for example; and,
- (c) overstroking is not required, but displacement of the spear assembly laterally by a unique tool controls removal.

Although the invention has been described with reference to a locking element (7) with two projections (26), it will be understood that one or more locking elements will be sufficient.

## Claims

1. A spear valve assembly (5) for insertion into the neck (3) of a beer keg comprising a body (14) having a skirt portion (17) with at least one opening (19) therein and a downtube assembly (12), and a locking member (7) carried by the downtube assembly (12) which, after insertion of the spear valve into the keg neck, projects through the at least one opening (19) and prevents the spear valve from being blown out of the keg by engagement behind the keg neck, the spear valve assembly (5) only being removable from the neck (3) of the beer keg by tilting the downtube assembly (12) relative to the skirt (17) to displace the locking element (7) laterally whereby the locking element (7) may clear the keg neck.
2. A spear valve assembly according to claim 1, wherein the piece safety device including an annular portion (25) which locates about the downtube assembly (12) and at least one projection (26) which extends through the at least one opening (19) in the skirt (17).
3. A spear valve assembly according to claim 1 or 2, wherein the locking element (7) includes two projections (26) which normally project through corresponding slots (19) in the skirt (17).
4. A spear valve assembly (5) comprising a valve body (14) for engagement with a keg neck (3), a skirt (17) on the valve body (14) including openings (18) for the throughflow of beer during filling and at least one further opening (19), a downtube assembly (12) movable relative to the valve body (5) and skirt (17) and including a downtube for projecting into beer in a keg, a valve (27) co-operable with the valve body (5) to close the keg, and spring means (6) acting between a reaction member (24) on the downtube (12) and the valve (27) biasing the valve (27) into its closed position, and a locking member (7) carried by the downtube assembly (12) so as to project through the at least one further opening (19), in use, the locking member preventing the spear valve assembly (5) from being ejected from a beer keg by engagement behind the keg neck, the spear valve assembly (5) being removed from the beer keg by tilting the downtube assembly (12) relative to the skirt (17) to retract the locking member (7).
5. A spear valve assembly according to claim 4, wherein the locking member (7) comprises two juxtaposed projections which project through slots (19) in the skirt (17).
6. A method of converting a keg spear into a safety keg spear to prevent the spear being ejected on unintentional pressurized release, the spear (5) including a valve body (14) for engagement with the keg neck (3), a downtube assembly (12) for projecting into beer in a keg and a valve for controlling fluid flow through the spear, and a skirt (17) on the valve body (14) including openings (18) for the throughflow of beer during filling, the method comprising:
  - forming at least one further opening (19) in the skirt (17) and fitting a locking device (7) to the downtube assembly (12) so that a projecting portion of the locking device projects through the at least one further opening (19) after insertion through the keg neck so as to engage behind the neck on unintentional pressurized release.
7. A method according to claim 6, wherein the spear valve assembly (5) may be removed from the keg neck by providing a release tool (20) locating the release tool (20) within the downtube assembly (12) and tilting the downtube assembly (12) relative to the valve body (14) to retract the locking device from the at least one further opening (19) allowing the locking element to clear the keg neck and thereby permit the spear valve assembly to be removed from the keg.

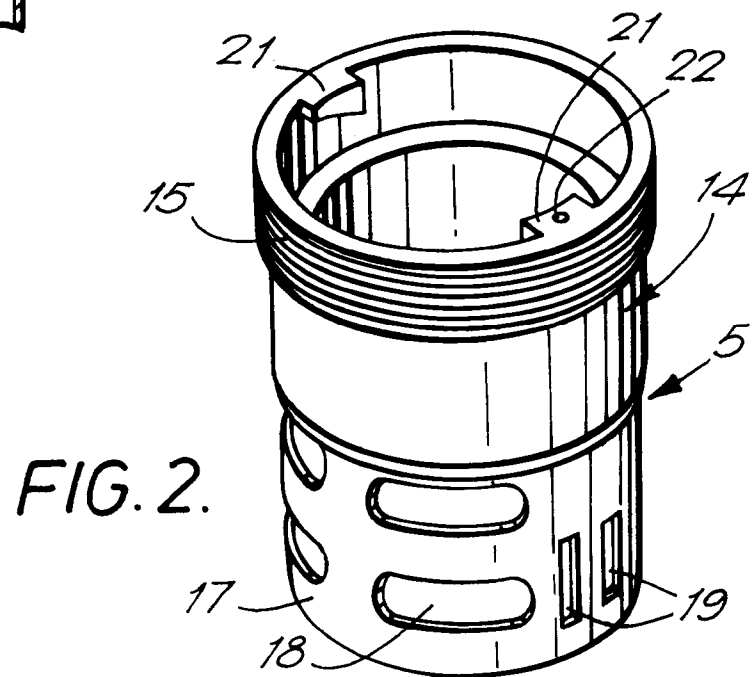
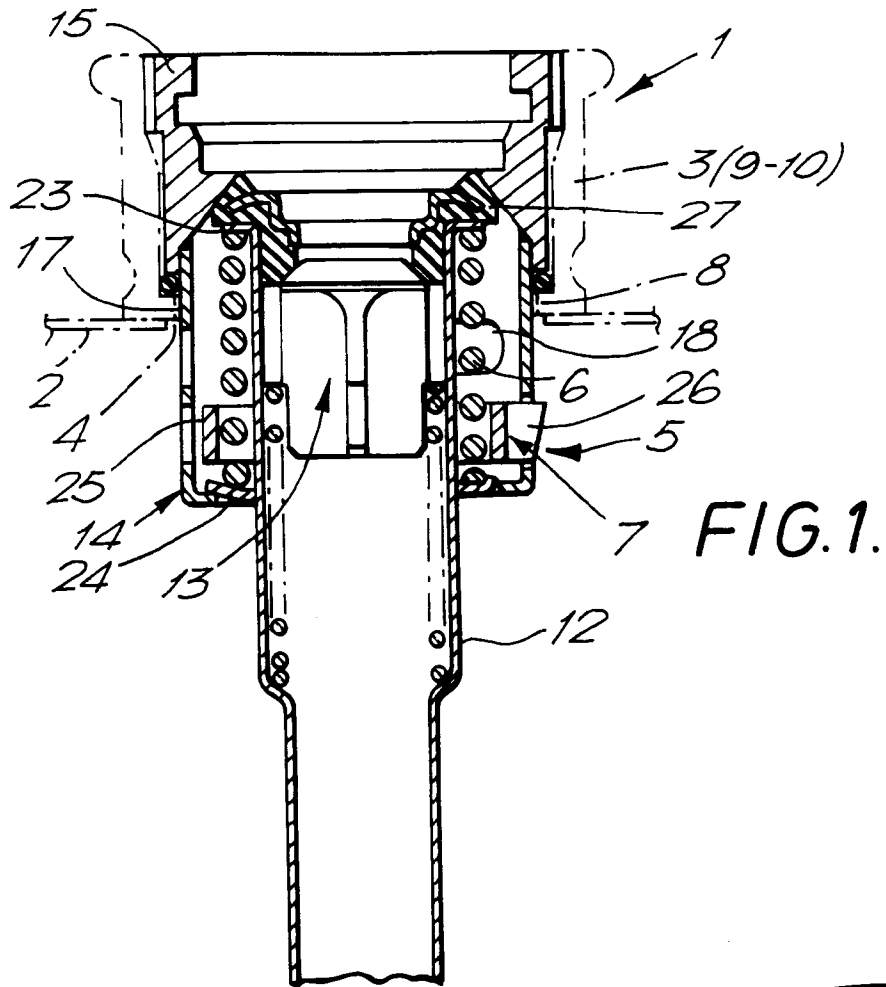


FIG. 3.

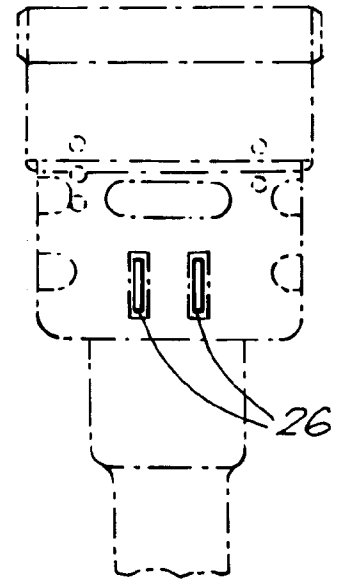
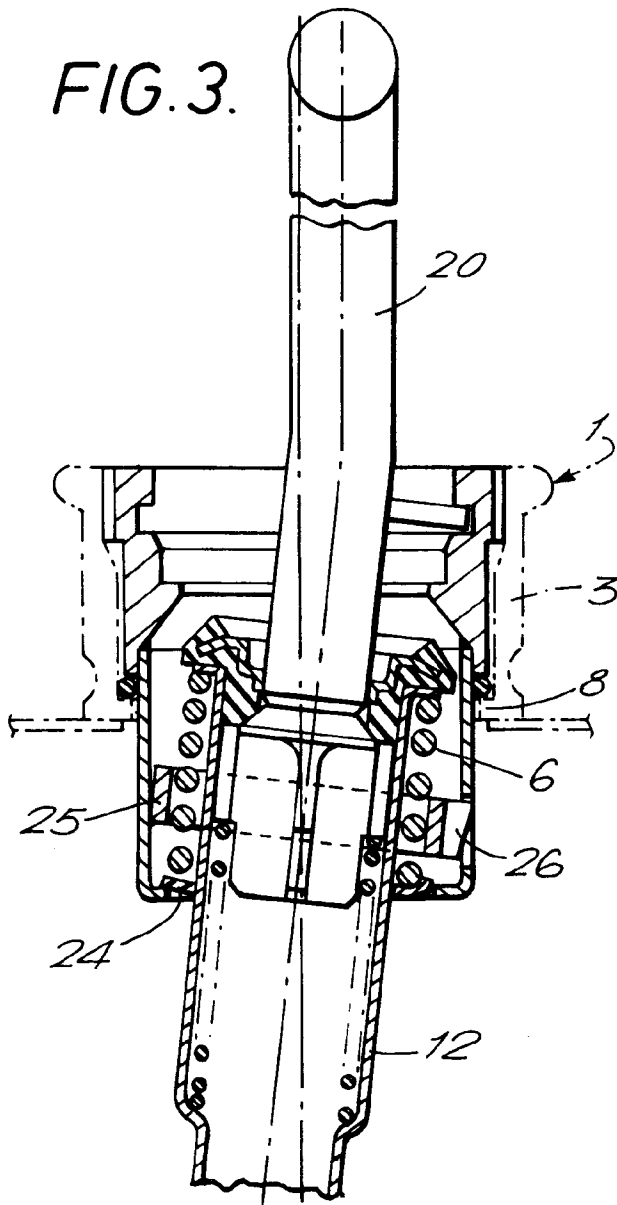


FIG. 4.

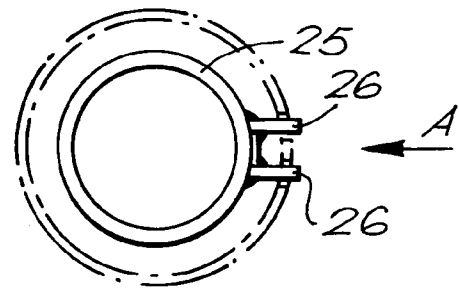


FIG. 6.

FIG. 5.

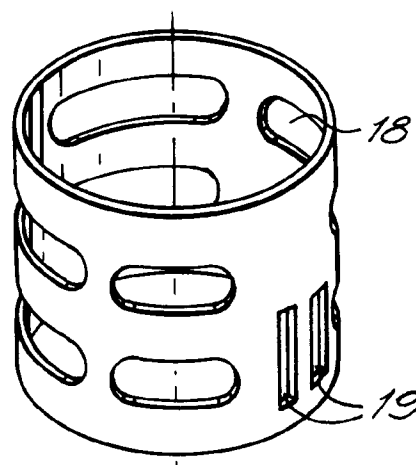
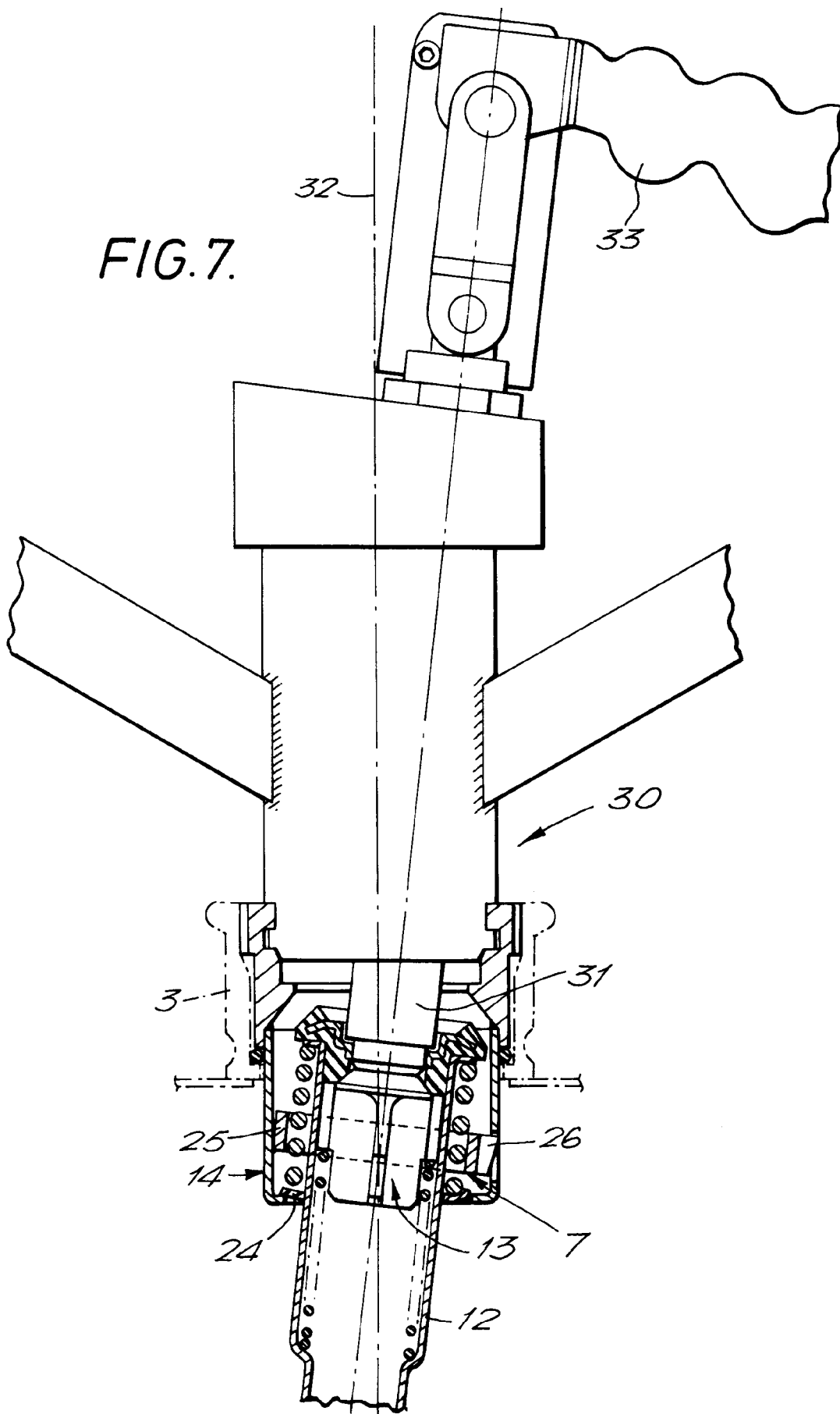


FIG. 7.





European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 94 30 6964

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)
X	WO-A-91 02694 (MICRO MATIC A/S)  * page 9, line 7 - page 11, line 8 * * figures 1-7 *	1,2,4,6, 7	B67D1/08
X A	GB-A-2 188 040 (MICRO MATIC A/S) * page 2, line 54 - page 3, line 32 * * figures 1-4 *	1-4 5	
D,A	EP-A-0 493 976 (UNIVERSAL EQUIPMENT CO) * abstract; figure 4 *	1,4	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B67D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 6 January 1995	Examiner Smolders, R
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>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</p> <p>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  .....  &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.82 (P04C01)