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(54) **Keg comprising a valve fitting and a deflector plate**

Fass mit Ventilarmatur und Ablenkplatte

Fût muni d'un raccord à soupape et d'un déflecteur

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Description

[0001] The invention relates to improvements in containers such as a keg for housing pressurised fluids like beer. In particular, the invention relates to improvements in fittings for such kegs which fittings house a valve which facilitates ingress and egress of pressurised fluid into and out of the keg.

[0002] It is known to provide various forms of fitting for pressurised kegs comprising an upper flange for attachment of a connector to a feed or outlet pipe. The fitting further comprises a valve consisting of a movable seal urged by a coiled spring against a valve seat provided on the under side of the upper flange. The flange is disposed away from the top wall of a keg to enable attachment of the connector. Additionally, it is known to provide a centrepiece or downtube away from the fitting to the bottom of the keg in order to facilitate removal of fluid from the keg.

[0003] However, known kegs and keg fittings require a multiple stage filling process in order to reduce frothing and to attempt to facilitate complete filling of the keg to required volumes of fluid such as beer. Using an inverted filling process wherein the fitting is below the rest of the keg, it is known to begin filling the keg at a first (low) flow rate or pressure for a short period of time say 5 seconds, followed by a second stage of filling at a slightly higher speed or pressure for say a further 5 to 10 seconds, followed finally by filling of the rest of the keg at a third higher speed or pressure for say a further 35 seconds. These times are given for a typical 50 litre keg wherein the final fluid pressure within the keg is less than 4 atmospheres. This multiple stage filling process is done to achieve relatively quick filling without excessive frothing of a liquid such as beer.

[0004] One objective of the invention is to provide a fitting for a container such as a pressurised keg which enables a single stage filling process and/or enables a reduction in the filling time of a keg. Another object of the invention is to provide a relatively simple to manufacture and cost effective fitting for kegs. A further object of the invention is to provide a keg which is easier to manufacture, and or has a valve fitting that is less likely to cause problematical frothing during filling.

[0005] GB-A-905125 (in particular Figures 1 and 3) describes a container for housing pressurised fluid, comprising a fitting for attachment to an aperture of a container wall, which fitting comprises a valve assembly for enabling ingress and egress of fluid into and out of the container via the aperture and a housing attachable to the wall and operably surrounding the valve assembly in use. The container also comprises a fluid deflector (see numerals 14 and 19 on Figure 1 and numerals 20 and 22 on Figure 3) operably located proximal the valve for deflecting fluid radially away from the aperture.

[0006] According to the invention as defined in claim 1 there is provided a container such as a keg for housing pressurised fluid like beer, comprising a fitting for attachment to an aperture in a container wall, which fitting comprises a valve assembly for enabling ingress and egress of fluid into and out of the container via the aperture, and a housing attachable to the wall and operably surrounding the valve assembly in use, wherein the container further comprises a fluid deflector operably located proximal the valve for deflecting fluid radially away from the aperture, characterised in that the deflector is attached to the inside of the keg wall having the aperture. In this specification the term keg and container are used interchangeably to note any kind of fluid container.

[0007] In one form, the deflector is attached to the inside of the keg wall having the aperture, for example by welding. In a preferred form the deflector comprises a substantially flat central region preferably approximately the same size as the aperture. The deflector preferably has outer legs extending towards the inside wall of the keg and preferably being adapted for attachment thereto for example by welding. The deflector can comprise a central aperture for a downtube, and a seat for the upper part (or centre-piece) of the downtube in order to locate and maintain the position of the downtube. The downtube can comprise suitable lugs to sit on the seat forming part of the deflector.

[0008] Preferably an aperture is defined by the deflector between the deflector and keg wall which aperture (possibly comprising two or more sections between legs) is substantially equal if not greater in size than the cross sectional area of the inlet aperture in the fitting (ie. through the valve).

[0009] Preferably, the housing comprises a neck and flange above the apertured wall of the keg, which together with the deflector define a chamber about the valve assembly which chamber has a radial cross-sectional area at any axial position which is substantially equal to or preferably greater than the cross-sectional area of a fluid inlet aperture (12) in the flange thereby to prevent or at least mitigate retardation in the flow or velocity of fluid into the keg.

[0010] Embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

FIGURE 1 is a schematic sectional side elevation view of a keg K according to the invention;

FIGURE 2 is a schematic side elevation view of a fitting at the top of a keg substantially shown in Figure 1;

FIGURE 3 is a plan elevation view from below of the fitting shown in Figure 2 in an assembled form;

FIGURE 4 is a sectional side elevation view of the fitting shown in Figures 2 and 3 in an assembled form;

FIGURE 5 is a schematic plan elevation view from

below of a second embodiment of a fitting according to the invention as shown in Figure 6; and

FIGURE 6 is a sectional side elevation view of a second embodiment of a fitting and keg according to the invention.

[0011] Referring to Figure 1 there is shown a keg K according to the invention comprising a top wall T having a central aperture about which is formed a neck N for a fitting F to which a connector is attached in use for filling or emptying keg K. Fitting F further comprises a spring S for resiliently urging a seal against a valve seat on the under side of the top flange of fitting F. Spring S co-operates in this regard with part (shoulder 20 described later) of a centrepiece or downtube C which facilitates removal of fluid from the keg in use. Keg K further comprises a deflector D for deflecting movement of fluid sideways or radially into the barrel during filling as will become apparent in relation to Figures 2 to 4.

[0012] Referring to Figures 2 to 4, there is shown in greater detail the components of fitting F which comprises an upper flange 10 connected for example by welding to the upper perimeter or shoulder of a neck N formed in top wall T of keg K. For example, neck N can be formed by deep drawing the top wall T about the substantially centrally disposed aperture. Flange 10 further comprises an aperture 12 and an outer rim 14 for attachment to a connector having feed or outlet pipes for a fluid. Fitting F further comprises a seal 16 which fits into a cup 18 at the upper end of spring S. Spring S is located against the shoulder 20 provided on centrepiece C from which project upper and lower lugs 22a and 22b respectively. This shoulder region 20 of centrepiece C further comprises a groove 24 for receiving a locating pin 26 at the bottom of spring S.

[0013] Keg K further comprises a deflector D consisting principally of a plate 30 having a substantially centrally located aperture 32 about which extends a central flat region 34 having a series of slots 35 for receiving lower lugs 22b. An angled region 36 extends away from central region 34 to a series, in this case three, legs which extend between the deflector plate and the inside surface of top wall T, whereat the deflector and top wall can be welded together for example.

[0014] To assemble the fitting F, spring S is lowered to engage pin 26 in groove 24 and, possibly using a special tool co-operating with rim 14 of flange 10, seal 16 is caused to pass through aperture 12 and locate in the seat on the underside of flange 10 adjacent the aperture 12. This action typically requires compressing the seal. Just prior to locating the seal, the lugs 22b of shoulder region 20 of centrepiece C are located in corresponding slots 35 in deflector D and centrepiece C can be rotated to say 60° thereby to enable lugs 22a and 22b to co-operate with central region 34 of Deflector D to hold centrepiece C in a fixed axial position. Hence, a reactive force is provided through the connection of deflector D and the inside of top wall T against the action of spring S which biases seal 16 against a seat on the under side of flange 10.

[0015] Beneficially, regions 34 and 36 of deflector D provide a sealed plate of substantially equal cross sectional area to the radial cross-section of the chamber CH below flange 10. Additionally, the diameter of neck N and distance between flange 10 and deflector D enable a relatively large chamber CH to be provided thereby enabling smooth transfer of fluid between an inlet pipe (not shown) and the main body of the keg. The apertures A provided between the legs 38 of deflector D assist together with regions 34 and 36 of the deflector plate to deflect incoming fluid in the direction of arrows L, that is radially away from the fitting. Beneficially, the fitting F shown in Figures 2 to 4 enables a single speed or pressurised transfer to take place thus avoiding the need for stepped speed of transfer. In this way, it has been found for example that the filling time can be reduced for a 50 litre keg by up to 30% if full speed is used instead of filling in stages. Accordingly, full flow of fluid can be achieved at all times in the filling of keg K according to the invention.

[0016] A further embodiment of the invention is shown in Figures 5 and 6 wherein in this embodiment the keg and fitting comprise substantially similar components to those shown in Figures 2 to 4 and accordingly like components are labelled using the same two digit reference number prefixed with the number 1.

[0017] In this embodiment, an open ended cylindrical neck N is provided having a rebated lower end 113 for attachment to the rim of the aperture formed in top wall T of the keg, for example attachment can be by welding. Further, the upper rim 111 of neck N is adapted for attachment to the under side of flange 110 again for example by welding into a rebated shoulder for example.

Claims

1. A container such as a keg (K) for housing pressurised fluid like beer, comprising a fitting (F) for attachment to an aperture (12) in a container wall (T), which fitting (F) comprises a valve assembly for enabling ingress and egress of fluid into and out of the container (K) via the aperture (12), and a housing (N, F) attachable to the wall (T) and operably surrounding the valve assembly in use, wherein the container (K) further comprises a fluid deflector (D) operably located proximal the valve for deflecting fluid radially away from the aperture (12) and **characterised in that** the deflector (D) is attached to the inside of the keg wall (T) having the aperture (12).

2. A container according to Claim 1 wherein the deflector (D) is attached to the inside of the keg wall (T) having the aperture (12) by welding.

3. A container according to Claim 1 or 2 wherein the deflector (D) comprises a substantially flat central region preferably approximately the same size as the aperture (12).

4. A container according to Claim 1, 2 or 3 wherein the deflector (D) has one or more outer legs extending towards the inside wall (T) of the keg (K) and preferably being adapted for attachment thereto for example by welding.

5. A container according to Claim 1, 2, 3 or 4 wherein the deflector (D) comprises a central aperture for a downtube (C) and a seat for the upper part or centre-piece of the downtube (C) in order to locate and maintain the position of the downtube (C).

6. A container according to Claim 5 wherein the downtube (C) comprises suitable lugs (22a, 22b) to sit on the seat forming part of the deflector (D).

7. A container according to any preceding claim wherein an aperture is defined by the deflector (D) between the deflector and keg wall (T) which aperture possibly comprising two or more sections between one or more legs is substantially equal or greater in size than the cross sectional area of the inlet aperture (12) in the fitting (F).

8. A container according to any preceding claim wherein the housing (N, F) comprises a neck (N) and flange (F) above the apertured wall (T) of the keg (K) which together with the deflector (D) define a chamber about the valve assembly which chamber has a radial cross-sectional area at any axial position which is substantially equal to or preferably greater than the cross-sectional area of a fluid inlet aperture (12) in the flange (F) thereby to prevent or at least mitigate retardation in the flow or velocity of fluid into the container (K).

Patentansprüche

1. Ein Behälter, wie ein Fass (K) zur Aufnahme einer eines unter Druck gesetzten Fluids, wie Bier, bestehend aus einer Armatur (F) zur Verbindung mit einer Öffnung (12) in einer Containerwand (T), wobei die Armatur (F) ein Ventil für Das Eintreten und Austreten des Fluids in und aus dem Behälter (K) durch die Öffnung (12) ermöglicht, und einem Gehäuse, das mit der Wand (T) verbindbar ist und betriebsfähig das Ventil bei der Verwendung umschließt, wobei der Behälter (K) ferner einen Fluiddeflektor (D) aufweist, der betriebsfähig proximal von dem Ventil angeordnet ist, um das Fluid radial von der Öffnung (12) abzulenken, **dadurch gekennzeichnet, dass** der Deflektor (D) an der Innenseite der Fasswand (T) mit der Öffnung (12) verbunden ist.

2. Behälter gemäß Anspruch 1, wobei der Deflektor (D) an der Innenseite der Fasswand (T) mit der Öffnung (12) durch verschweißen befestigt ist.

3. Behälter gemäß Anspruch 1 oder 2, wobei der Deflektor eine im Wesentlichen flache zentrale Region aufweist, die vorzugsweise dieselbe Größe wie die Öffnung (12) aufweist.

4. Behälter gemäß Anspruch 1, 2 oder 3 wobei der Deflektor (D) ein oder mehrere Beine aufweist, die sich in Richtung der Innenwand (T) des Fasses (K) erstrecken und vorzugsweise zur Verbindung mit diesem ausgebildet sind, beispielsweise durch verschweißen.

5. Behälter gemäß Anspruch 1, 2, 3 oder 4 wobei der Deflektor (D) eine zentrale Öffnung für ein Steigrohr (C) umfasst und einen Sitz für den oberen Teil des Steigrohrs (C) vorsieht, um das Steigrohr (C) zu positionieren und in der Lage festzuhalten.

6. Behälter gemäß Anspruch 5, wobei das Steigrohr (C) geeignete Vorsprünge (22a,22b) aufweist, die auf dem Teil des Deflektors (D) bildenden Sitz passen.

7. Behälter gemäß einem der vorhergehenden Ansprüche, wobei eine Öffnung durch den Deflektor (D) zwischen dem Deflektor und der Fasswand (T) gebildet wird, welche unter Umständen zwei oder mehr Abschnitte zwischen den einen oder mehreren Beinen aufweist, im Wesentlichen gleich groß oder größer ist als die Querschnittsfläche der Eingangsöffnung in der Armatur (F).

8. Behälter gemäß jedem der vorhergehenden Ansprüche, wobei das Gehäuse (N, F) einen Hals (N) und einen Flansch (F) oberhalb der geöffneten Wand (T) des Fasses (K) aufweist, die zusammen mit dem Deflektor (D) eine Kammer um das Ventil bilden, welche eine Querschnittsfläche in jeder axialen Position aufweist, die im Wesentlichen gleich oder vorzugsweise größer als die Querschnittsfläche der Fluideinlassöffnung (12) in dem Flansch (F) ist, um somit die Verzögerung der Einströmgeschwindigkeit in den Behälter (K) zu vermeiden oder zu reduzieren.

Revendications

1. Récipient, tel qu'un tonnelet (K), destiné à contenir un fluide sous pression, tel que de la bière, comprenant un embout (F) de fixation à une ouverture (12) de paroi formée dans une paroi (T) du récipient,

l'embout (F) comportant un ensemble à soupape destiné à permettre l'entrée et la sortie de fluide du récipient (K) par l'ouverture (12), et un boîtier (N, F) destiné à être fixé à la paroi (T) et entourant pendant le fonctionnement l'ensemble à soupape, dans lequel le récipient (K) comporte en outre un déflecteur de fluide (D) disposé pendant le fonctionnement du côté interne de la soupape et destiné à dévier le fluide radialement vers l'extérieur de l'ouverture (12), **caractérisé en ce que** le déflecteur (D) est fixé à l'intérieur de la paroi (T) du tonnelet ayant l'ouverture (12).

2. Récipient selon la revendication 1, dans lequel le déflecteur (D) est fixé à l'intérieur de la paroi (T) du tonnelet ayant l'ouverture (12) par soudage.

3. Récipient selon la revendication 1 ou 2, dans lequel le déflecteur (D) a une région centrale pratiquement plate qui a de préférence approximativement la même dimension que l'ouverture (12).

4. Récipient selon la revendication 1, 2 ou 3, dans lequel le déflecteur (D) possède une ou plusieurs branches externes s'étendant vers la paroi interne (T) du tonnelet (K) et adaptées de préférence à la fixation à celle-ci par exemple par soudage.

5. Récipient selon la revendication 1, 2, 3 ou 4, dans lequel le déflecteur (D) a une ouverture centrale destinée à un tube descendant (C) et un siège pour la partie supérieure ou pièce centrale du tube descendant (C) afin que la position du tube descendant (C) soit déterminée et maintenue.

6. Récipient selon la revendication 5, dans lequel le tube descendant (C) a des pattes convenables (22a, 22b) destinées à se loger sur le siège faisant partie du déflecteur (D).

7. Récipient selon l'une quelconque des revendications précédentes, dans lequel une ouverture est délimitée par le déflecteur (D) entre le déflecteur et la paroi (T) du tonnelet, cette ouverture, qui comprend éventuellement au moins deux tronçons placés entre une ou plusieurs branches, ayant une dimension pratiquement égale ou supérieure à la section de l'ouverture (12) d'entrée dans l'embout (F).

8. Récipient selon l'une quelconque des revendications précédentes, dans lequel le boîtier (N, F) comporte un col (N) et un flasque (F) au-dessus de la paroi (T) du tonnelet (K) ayant l'ouverture et, avec le déflecteur (D), délimite une chambre autour de l'ensemble à soupape, cette chambre ayant une section radiale en position axiale quelconque qui est pratiquement égale ou de préférence supérieure à la section d'une ouverture (12) d'entrée de fluide dans le flasque (F), si bien que le retard à l'écoulement du fluide ou la réduction de la vitesse du fluide dans le récipient (K) est empêché ou au moins réduit.

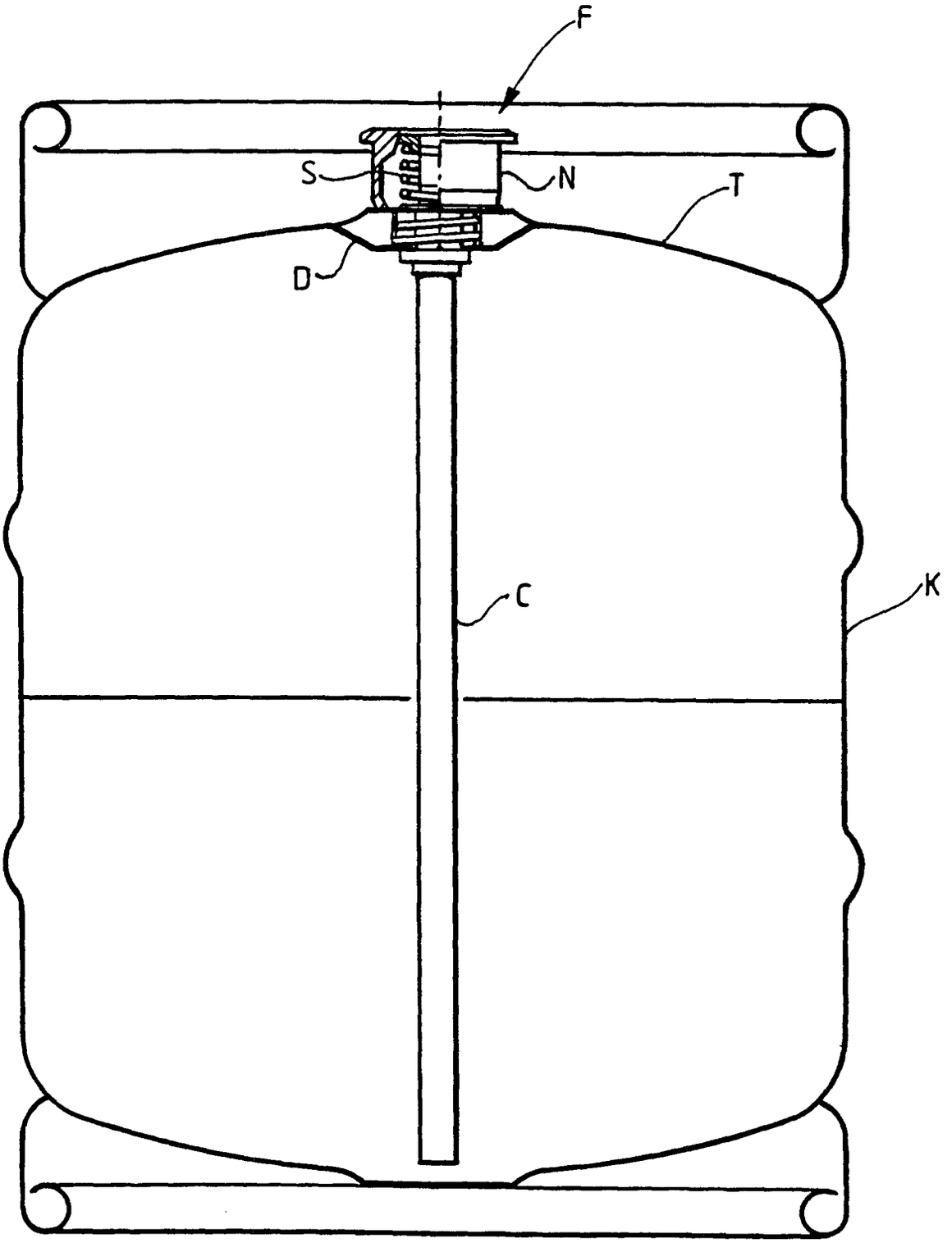


Fig.1.

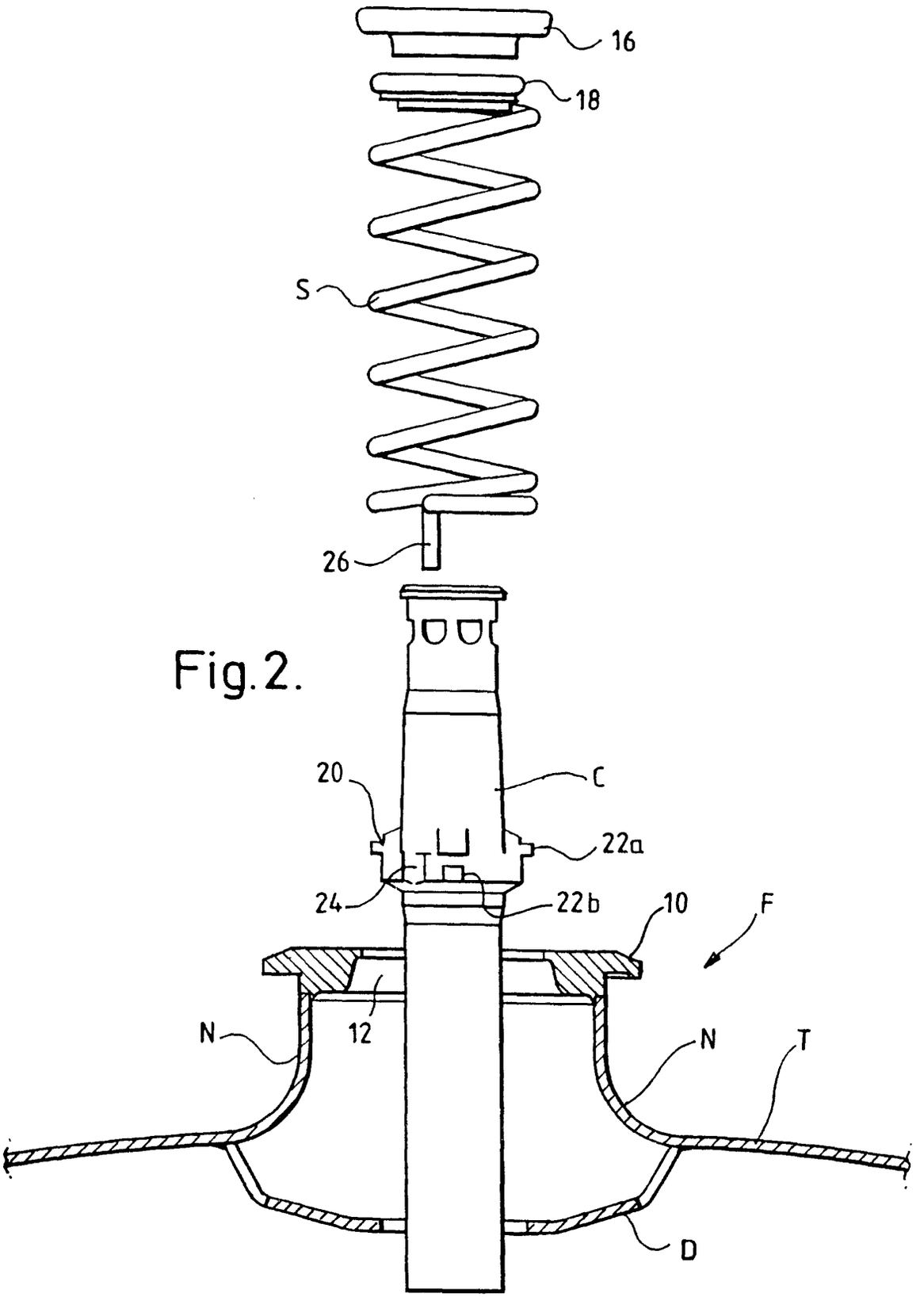


Fig.2.

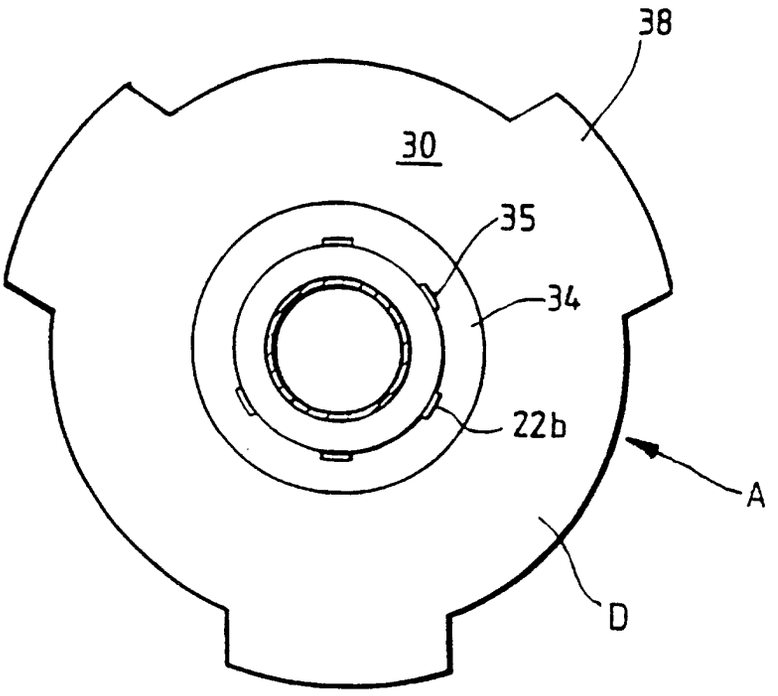


Fig.3.

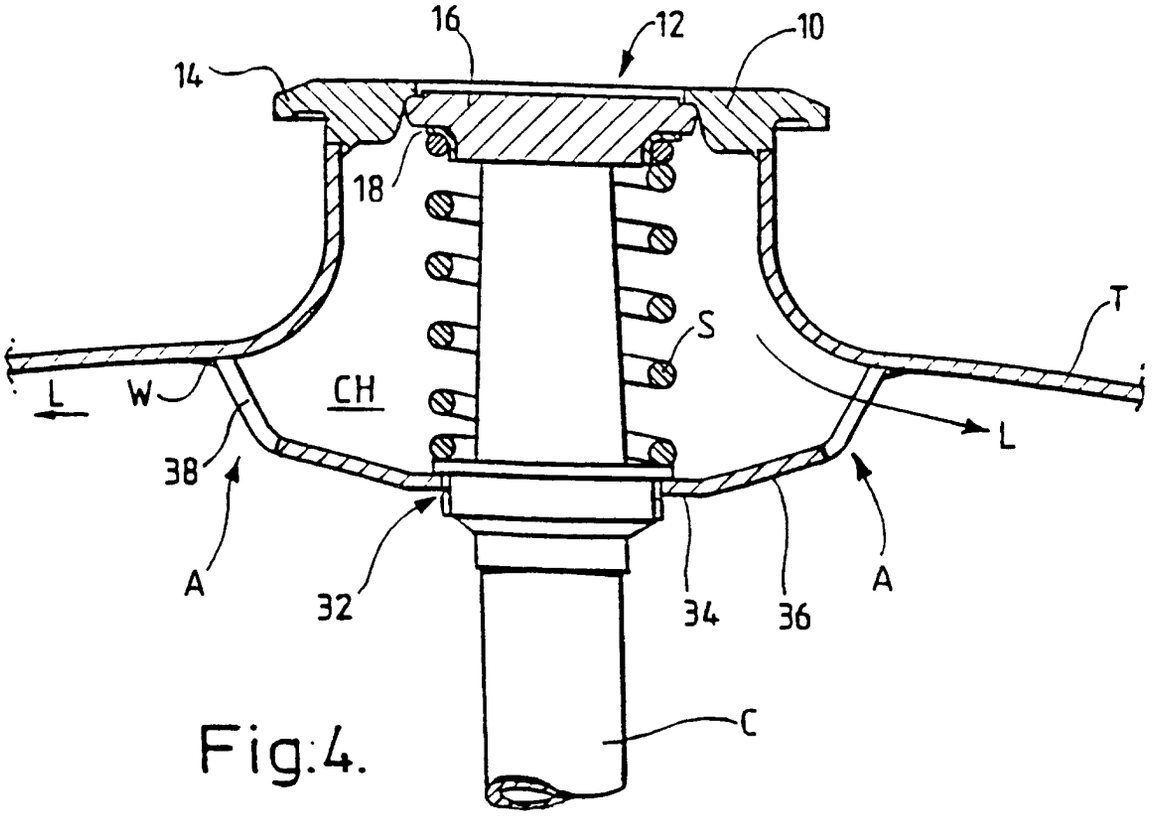


Fig.4.

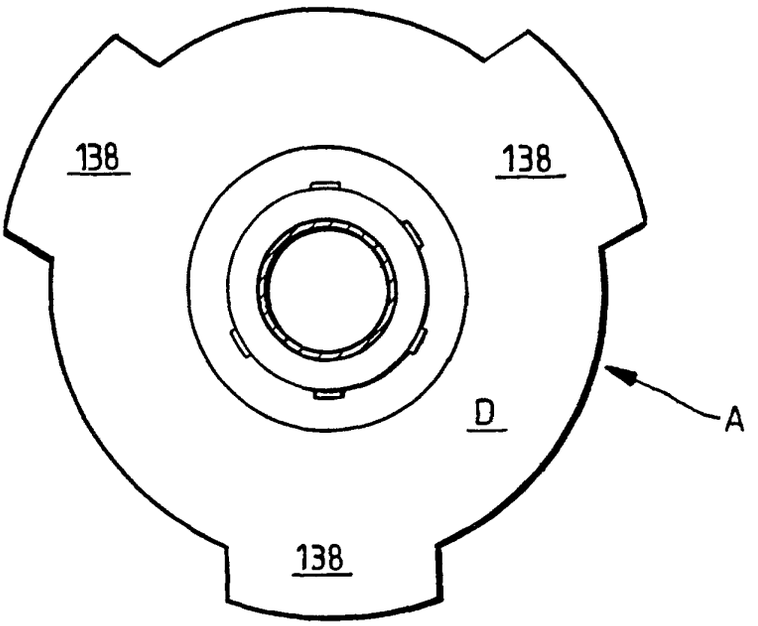


Fig.5.

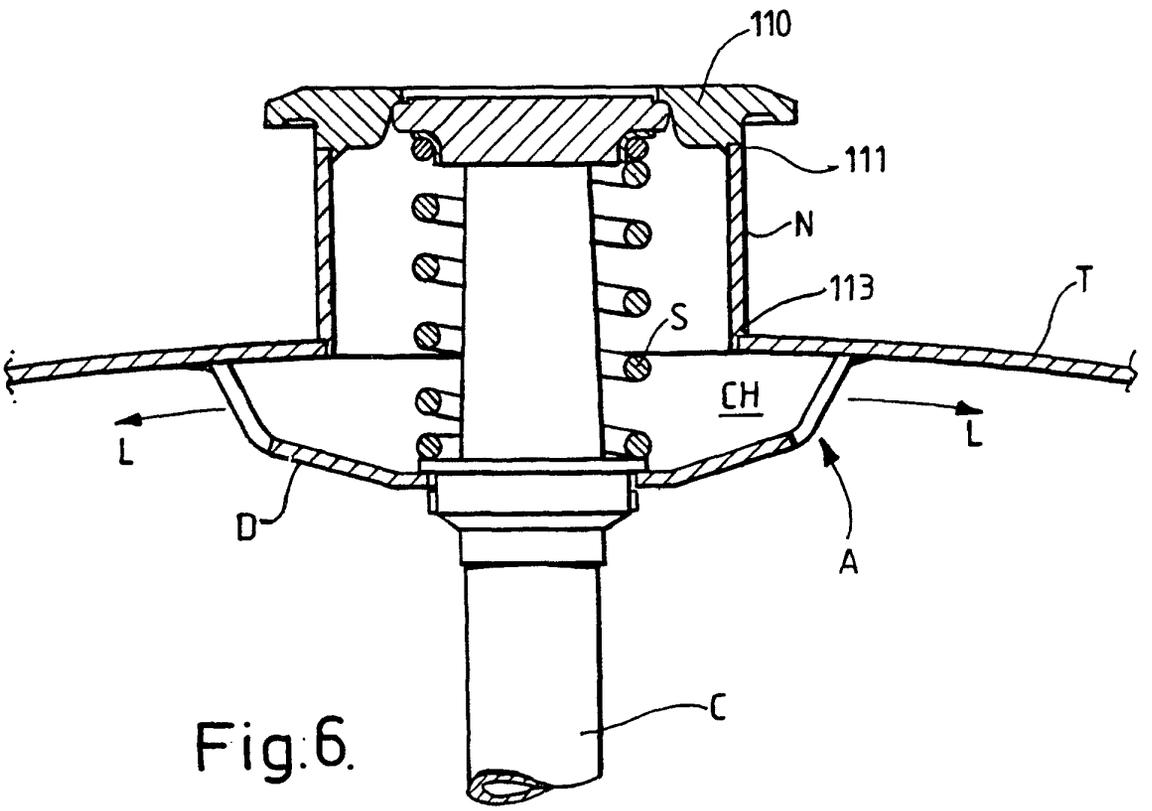


Fig.6.