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(54) **Device for lifting holders**

Vorrichtung zum Heben von Behältern

Dispositif pour le levage des conteneurs

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Description

[0001] The present invention relates to a device for lifting holders such as containers or casks.

[0002] Devices are known for this purpose wherein casks are picked up using suction cups which engage on the side wall of the cask by means of a vacuum or underpressure. Such devices have the negative aspect that, if the container is damaged or dented, this vacuum or this underpressure is unreliable, which has the result on the one hand that a cask is not lifted at all or, and this is more dangerous, that a lifted cask falls in uncontrolled manner. People can hereby be injured and/or casks caused to leak.

[0003] GB-A- 825 492 discloses an attachment for the lifting carriage of a masted lift truck. The attachment comprises a hooking member fixed to a carrier body for supporting a side of the holder when in a horizontal lifting position.

[0004] In order to obviate this drawback and to provide an improved lifting device, the present invention relates to a device for lifting holders such as a container, according to claim 1.

[0005] Such a lifting device has the advantage, among others, that a holder can be picked up in simple manner by means of hooking. The holder can further be picked up in lying/horizontal position by means of a lifting device suitably oriented for the purpose. This is practical if for instance holders have to be picked up and set down in lying/horizontal position.

[0006] The device further provides a press-out member for pressing the holder out of the hook, whereby gentle release becomes possible in different orientations of the holder. The press-out member is coupled to the carrier body via a device unit and pivot means coupled thereto. This drive unit is driven either mechanically by manual effort or for instance by a motor.

[0007] In a first preferred embodiment, the device comprises a spacer for supporting the holder at a position lying on the other side of the centre of gravity of the holder than where the hooking member hooks onto the holder. When the holder is in a vertical position, the hook is herein situated on the top side of the holder and the spacer on the lower side of the holder on the same side. The spacer hereby presses the holder against the hook.

[0008] The support member preferably extends in the position of use from the carrier body to a part of a side wall of the holder. It is desirable here that the support member contacts the wall of the holder in curved manner when the holder is situated in the lifting device. In a horizontal position the holder is hereby supported in a manner that facilitates a smooth rolling of the holder from the support when it is released.

[0009] Using an enclosing member for enclosing the hooked-in part of the holder, the holder is secured in simple manner so that it will not come loose in the case of careless movements of the device with a hooked holder.

[0010] The press-in member is here preferably coupled to the carrier body via a drive unit and pivot means coupled thereto. This drive unit is driven either mechanically by manual effort or for instance by a motor.

[0011] In a further embodiment a rotation shaft is provided for rotating the carrier member and for coupling the carrier body to a transport device for the purpose of displacing the device. Both horizontally and vertically oriented holders can hereby be lifted with a rotatable device. The orientation of a holder can also be changed using the device, whereby vertically oriented holders can be laid down and vice versa. The placing of a holder in a transport means or set-down location can therefore be performed in any desired orientation with a device.

[0012] The carrier body is herein rotatable between at least one position in which a hooked holder is situated in a horizontal position and a position in which this holder is situated in a vertical position.

[0013] Further advantages, features and details of the present invention will become apparent on the basis of the following description with reference to the accompanying figures, in which:

- figure 1 shows a side view of a first embodiment according to the present invention in a first position of use;
- figure 2 shows a side view of the embodiment of figure 1 in a second position of use;
- figure 3 shows a side view of the embodiment of figure 1 in a third position of use;
- figure 4 shows a cross-section of a further embodiment according to the present invention;
- figure 5 is a cut-away view in perspective of the embodiment of figure 4 in a vertical position of use;
- figure 6 is a cut-away view in perspective of the embodiment of figure 4 in a horizontal position of use;
- figure 7 is a partly cut-away side view of the embodiment of figure 4.

[0014] The preferred embodiment according to the present invention shown in figure 1 is a cask lifter 10. This comprises a vertical beam 9 which ends in a hook 8 at the top. A drive cylinder 4 is mounted rotatably on at least one side by means of bolt 11. This drive cylinder drives a bent lever 3 which is mounted rotatably on beam 9 by means of shaft 12. Lever 3 is provided with a blocking profile 5.

[0015] A connecting rod 2 is mounted hingedly on this lever for the purpose of rotating a pushing member 1 comprising pushing edges 7 and 6. This pushing member is fixed on a side thereof to the curve of the hook by means of shaft 13 and on the other side to connecting rod 2 by means of shaft 14.

[0016] Lever 3 rotates about shaft 12 when the piston of the drive cylinder moves. Shafts 12,15 herein substantially follow arrows A and B.

[0017] In the position of use of figure 1 the blocking profile 5 blocks the edge of cask V hooked into hook 8. The piston in the drive cylinder then moves and the lever

hereby pivots in the direction of arrows A and B. The blocking profile hereby co-displaces, whereby the hooking opening is left free.

[0018] The pushing member (the pear) 1 simultaneously pushes the edge of the cask out of the hook with edge 7. The cask is hereby released in controlled manner from the hook.

[0019] Close to the end of the stroke of the piston in drive cylinder 4 the pushing member is situated almost in the position of figure 3, and this pushing member is still pushing slightly with edge 6 thereof. In the position of figure 3 the cask is wholly released from the hook.

[0020] In a further embodiment, a lifting device 20 (fig. 4 and following) is provided with a rotation shaft 23. The whole device can be rotated herewith, whereby casks can be picked up and offloaded in horizontal and vertical position.

[0021] As shown in figure 5, hook 21 is relatively wide and connected by means of a plate 25 to carrier beam 26. A "finger" or support member 22 is also fixed to plate 25 for the purpose of stabilizing and/or supporting the cask. In the horizontal position (fig. 6) the cask is supported by the finger.

[0022] On the lower side of beam 26 there is mounted a support or spacer 24 for further support of the cask. The further away the spacer is from the beam, the harder the upper edge of the cask is pressed into the hook.

[0023] In the figures "F" symbols indicate where in the shown orientation the cask presses against the diverse components of the lifting device.

[0024] Within the meaning of this text the skilled person can arrive at a number of modifications and combinations of the diverse aspects of the present invention which all lie within ambit of the claims. The rights sought are defined by the appended claims.

Claims

1. Holder lifting device (10, 20), for lifting holders (V) such as a container, comprising:

   - a carrier body (9, 26),
   - a hooking member (8, 21) fixed to the carrier body (9, 26) for hooking to a part of the holder (V) suitable for this purpose,
   - a support member (24) fixed to the carrier body (9, 26) for supporting at least a side of the holder (V) when this latter is situated in a horizontal position in the lifting device (10, 20), **characterized by** the lifting device (10, 20) comprising a press-out member (1) for pressing the holder (V) out of the hook (8, 21), wherein the press-out member (1) is coupled to the carrier body (9, 26) via a drive unit (4) and pivot means (2, 3) coupled thereto.

2. Device as claimed in claim 1, comprising a spacer (24) for supporting the holder (V) at a position lying on the other side of the centre of gravity of the holder (V) than where the hooking member (8, 21) hooks onto the holder (V).

3. Device as claimed in claim 1 or 2, wherein the support member (24) extends in the position of use from the carrier body (9, 26) to a part of a side wall of the holder (V).

4. Device as claimed in one or more of the foregoing claims, wherein the support member (24) contacts the wall of the holder (V) in curved manner when the holder (V) is situated in the lifting device (10, 20).

5. Device as claimed in one or more of the foregoing claims, comprising an enclosing member (5) for enclosing the hooked-in part of the holder (V).

6. Device as claimed in one or more of the foregoing claims 1-5, wherein the press-in member (5) is coupled to the carrier body (9, 26) via a drive unit (4) and pivot means coupled thereto.

7. Device as claimed in one or more of the foregoing claims, comprising a rotation shaft (23) for rotating the carrier body (9, 26) and for coupling the carrier body (9, 26) to a transport device for the purpose of displacing the device.

8. Device as claimed in one or more of the foregoing claims, wherein the carrier body (9, 26) is rotatable between at least one position in which a hooked-in holder (V) is situated in a horizontal position and a position in which this holder (V) is situated in a vertical position.

Patentansprüche

1. Behälterhebevorrichtung (10, 20) zum Heben von Behältern (V), zum Beispiel Containern, welche umfasst:

   - einen Trägerkörper (9, 26),
   - ein am Trägerkörper (9, 26) befestigtes Hakenteil (8, 21) zum Einhaken an einem für diesen Zweck geeigneten Teil des Behälters (V),
   - ein am Trägerkörper (9, 26) befestigtes Stützteil (24) zum Stützen wenigstens einer Seite des Behälters (V), wenn dieser letztgenannte sich in einer horizontalen Position in der Hebevorrichtung (10, 20) befindet,

   dadurch gekennzeichnet, dass die Hebevorrichtung (10, 20) ein Herausdrückteil (1) umfasst zum Drücken des Behälters (V) aus dem Haken (8, 21), wobei das Herausdrückteil (1) über eine Antriebs-

einheit (4) und daran gekoppelte Drehmittel (2, 3) an den Trägerkörper (9, 26) gekoppelt ist.

2. Vorrichtung gemäß Anspruch 1, welches einen Abstandshalter (24) umfasst zum Stützen des Behälters (V) an einer Position, die auf der anderen Seite des Schwerpunkts des Behälters (V) liegt als dort, wo das Hakenteil (8, 21) sich auf dem Behälter (V) einhakt.

3. Vorrichtung gemäß Anspruch 1 oder 2, wobei sich das Stützteil (24) in der Benutzungsposition vom Trägerkörper (9, 26) zu einem Teil einer Seitenwand des Behälters (V) erstreckt.

4. Vorrichtung gemäß einem oder mehreren der vorhergehenden Ansprüche, wobei das Stützteil (24) die Wand der Behälters (V) kurvenförmig kontaktiert, wenn sich der Behälter (V) in der Hebevorrichtung (10, 20) befindet.

5. Vorrichtung gemäß einem oder mehreren der vorhergehenden Ansprüche, welche ein einschließendes Teil (5) umfasst zum Einschließen des eingehakten Teils des Behälters (V).

6. Vorrichtung gemäß einem oder mehreren der vorhergehenden Ansprüche 1-5, wobei das Eindrückteil (5) an den Trägerkörper (9, 26) über eine Antriebseinheit (4) und daran gekoppelte Drehmittel gekoppelt ist.

7. Vorrichtung gemäß einem oder mehreren der vorhergehenden Ansprüche, welche eine Rotationswelle (23) umfasst zum Rotieren des Trägerkörpers (9, 26) und zum Koppeln des Trägerkörpers (9, 26) an eine Transportvorrichtung zum Zwecke des Verschiebens der Vorrichtung.

8. Vorrichtung gemäß einem oder mehreren der vorhergehenden Ansprüche, wobei der Trägerkörper (9, 26) rotierbar zwischen wenigstens einer Position ist, in welcher ein eingehakter Behälter (V) sich in einer horizontalen Position befindet, und einer Position, in der dieser Behälter (V) sich in einer vertikalen Position befindet.

Revendications

1. Dispositif de levage de supports (10, 20), destiné à soulever des supports (v) tels qu'un conteneur, comportant :

- un corps porteur (9, 26)
- un élément d'accrochage (8, 21) fixé sur le corps porteur (9, 26) afin de s'accrocher sur une partie du support (v) appropriée à cet usage,
- un élément de maintien (24) fixé sur le corps porteur (9, 26) afin de maintenir au moins un côté du support (v) lorsque ce dernier est situé en position horizontale dans le dispositif de levage (10, 20),

caractérisé par le fait que le dispositif de levage (10, 20) comprend un élément écarteur (1) destiné à écarter le support (v) du crochet (8, 21), dans lequel l'élément écarteur (1) est couplé au corps porteur (9, 26) par l'intermédiaire d'une unité d'entraînement (4) et de moyens de pivot (2, 3) couplés à celle-ci.

2. Dispositif selon la revendication 1, comprenant une entretoise (24) afin de maintenir le support (v) à une position située de l'autre côté du centre de gravité du support (v) par rapport à l'endroit où l'élément d'accrochage (8, 21) s'accroche sur le support (v).

3. Dispositif selon la revendication 1 ou 2, dans lequel l'élément de maintien (24) s'étend dans la position d'utilisation à partir du corps porteur (9, 26) vers une partie d'une paroi latérale du support (v).

4. Dispositif selon une ou plusieurs des revendications précédentes, dans lequel l'élément de maintien (24) entre en contact avec la paroi du support (v) de manière incurvée lorsque le support (v) est situé dans le dispositif de levage (10,20).

5. Dispositif selon une ou plusieurs des revendications précédentes, comprenant un élément de retenue (5) afin de retenir la partie accrochée du support (v).

6. Dispositif selon une ou plusieurs des revendications 1 à 5 précédentes, dans lequel l'élément presseur (5) est couplé au corps porteur (9, 26) par l'intermédiaire d'une unité d'entraînement (4) et de moyens de pivot couplés à celle-ci.

7. Dispositif selon une ou plusieurs des revendications précédentes, comprenant un arbre de rotation (23) afin de faire tourner le corps porteur (9, 26) et de coupler le corps porteur (9, 26) à un dispositif de transport dans le but de déplacer le dispositif.

8. Dispositif selon une ou plusieurs des revendications précédentes, dans lequel le corps porteur (9, 26) peut tourner entre au moins une position dans laquelle un support (v) accroché est situé en position horizontale et une position dans laquelle ce support (v) est situé en position verticale.

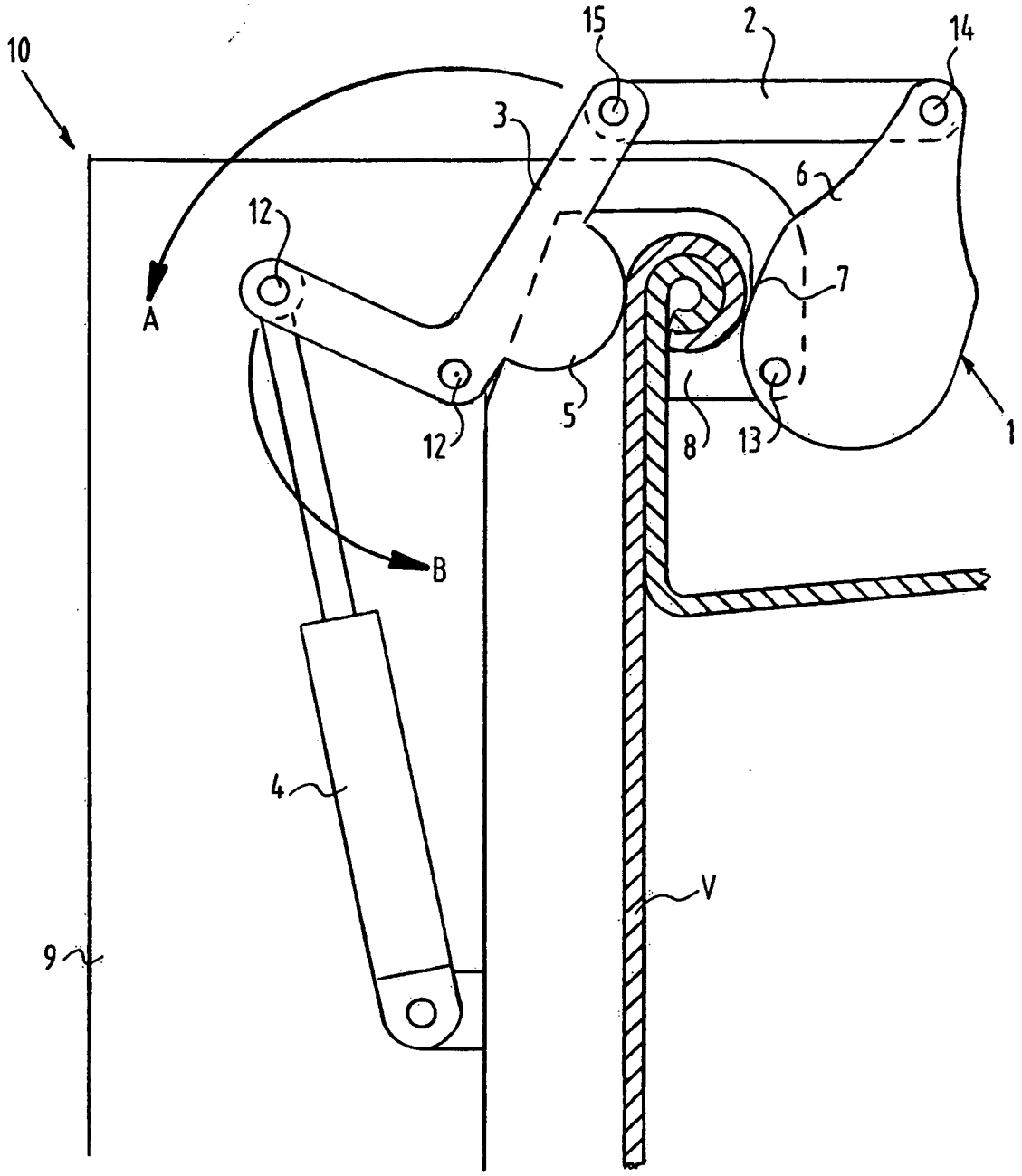


FIG. 1

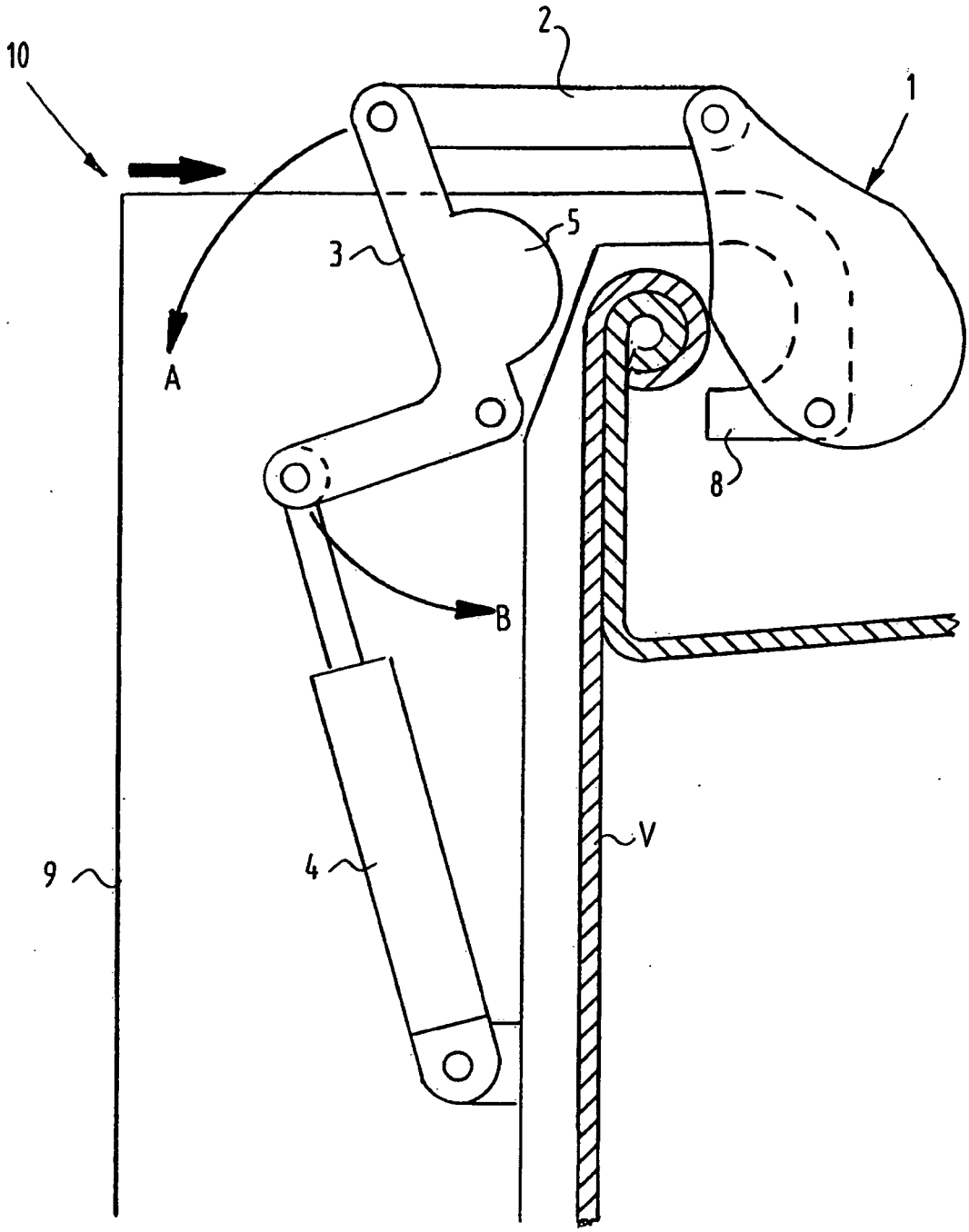


FIG. 2

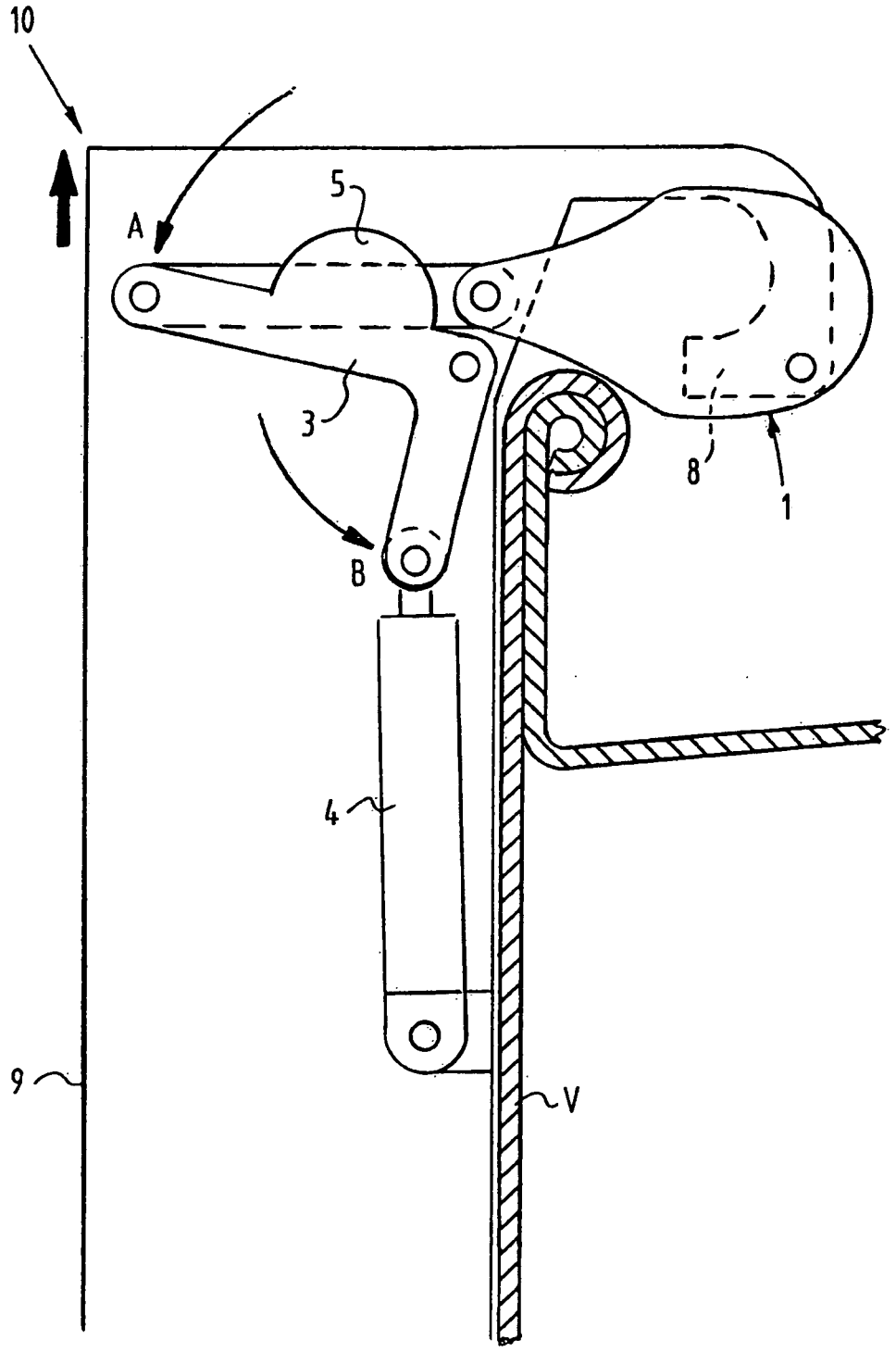


FIG. 3

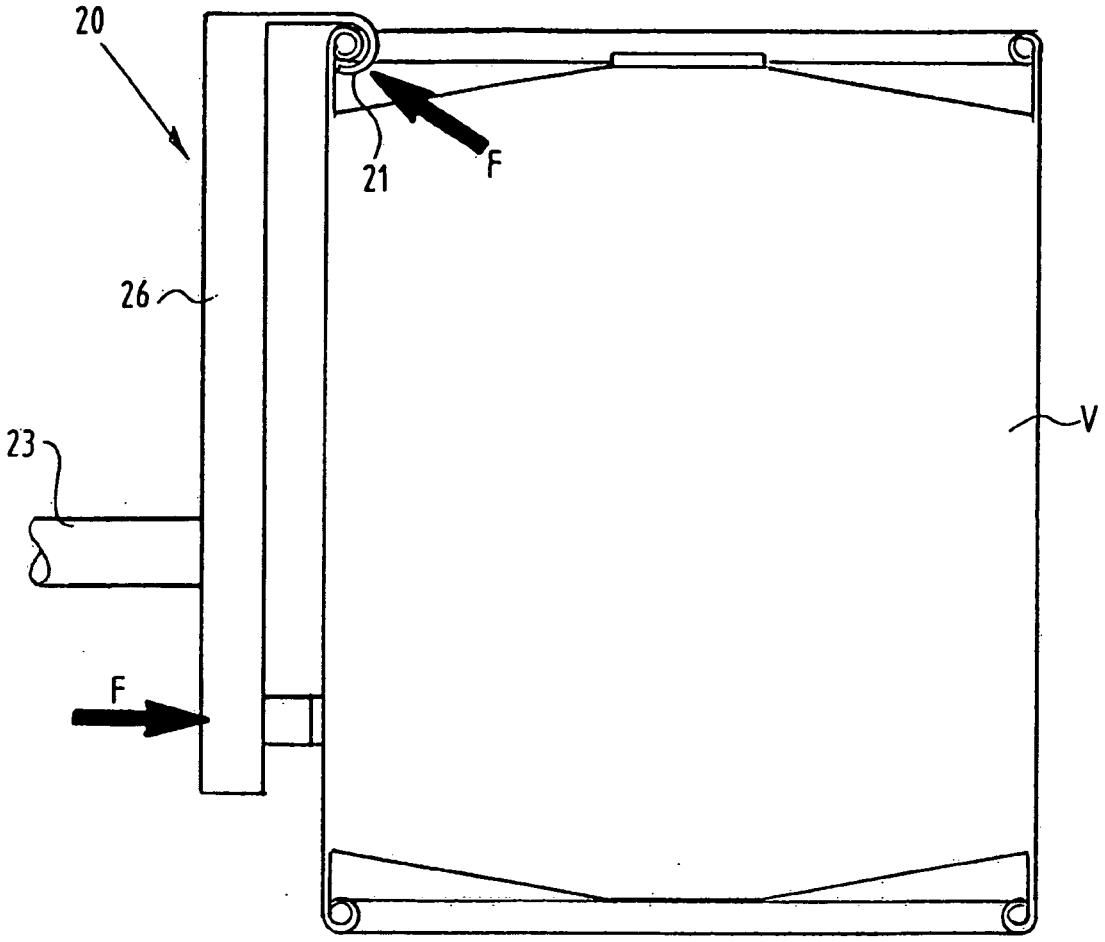


FIG. 4

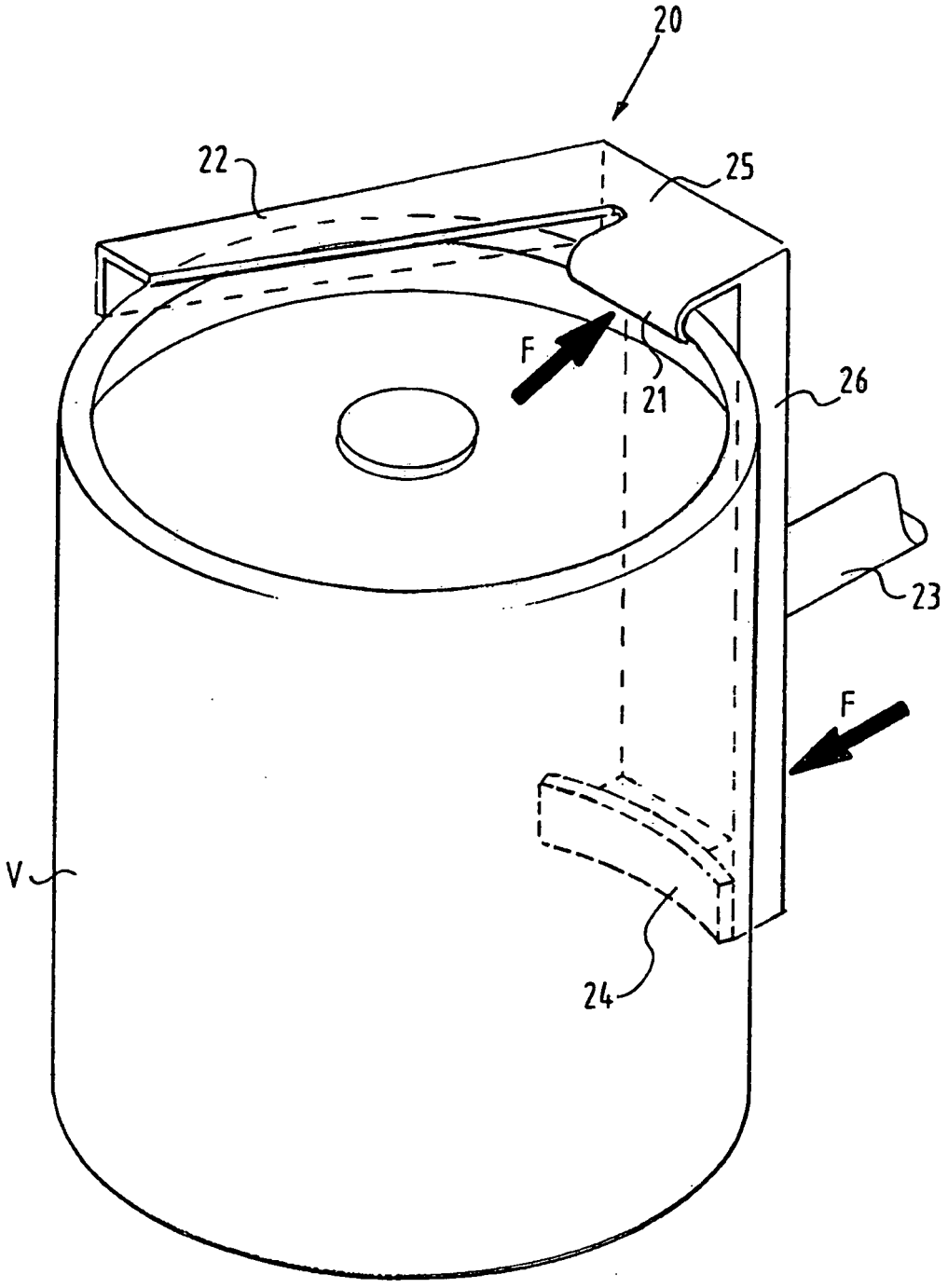


FIG. 5

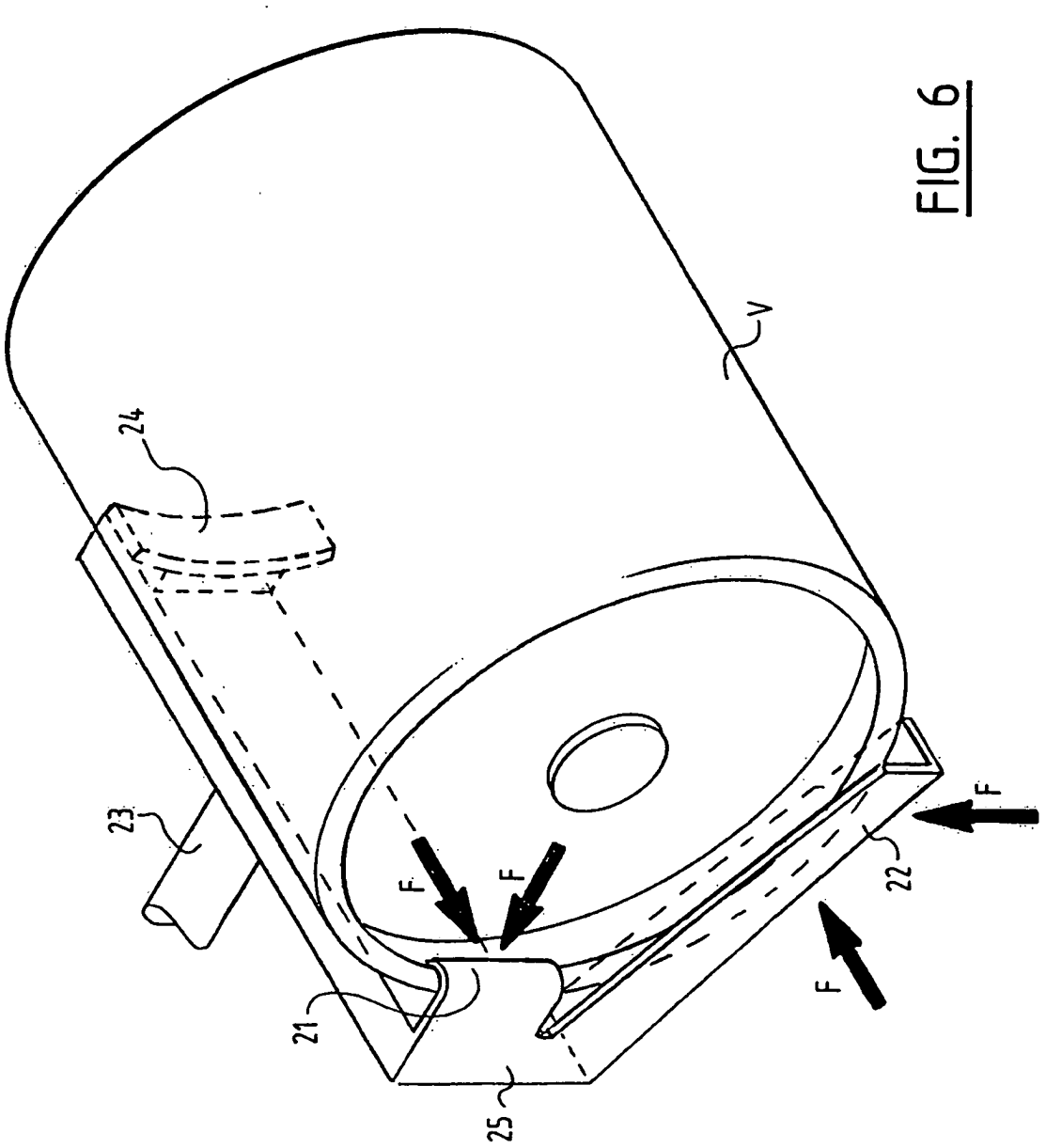


FIG. 6

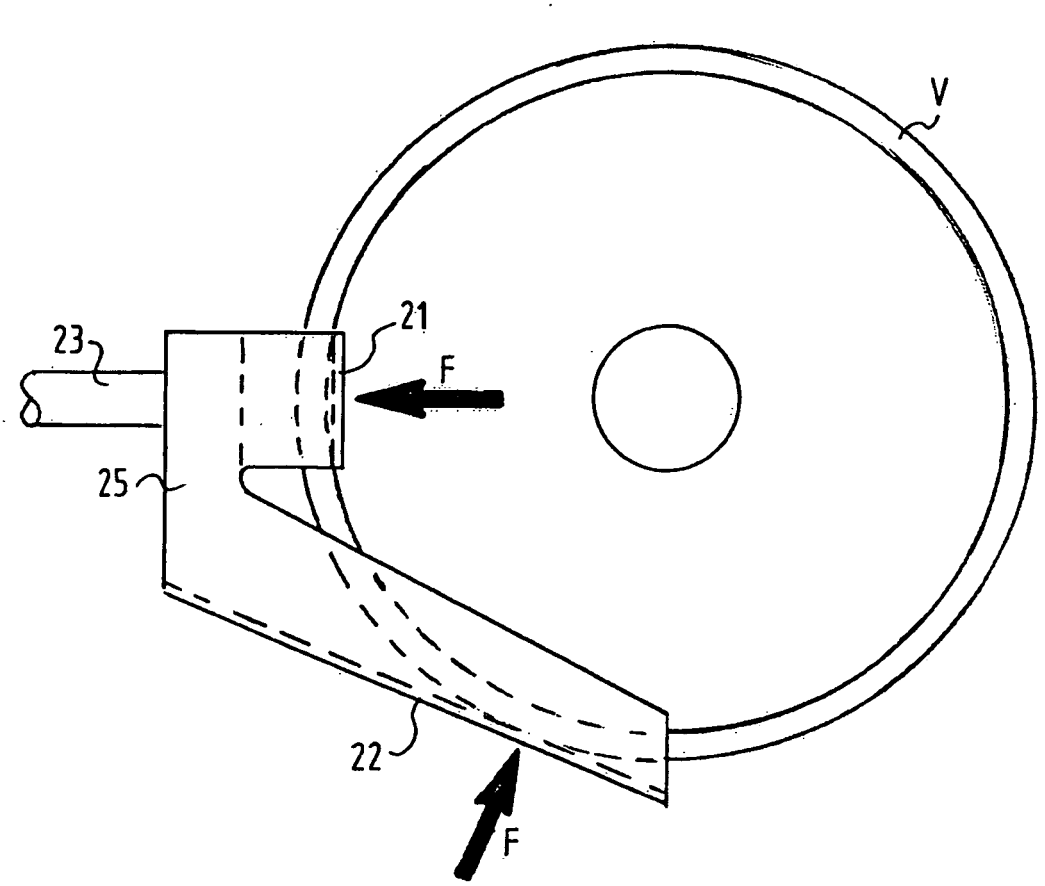


FIG. 7

REFERENCES CITED IN THE DESCRIPTION

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