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(54) **Device for lifting holders**

(57) The present invention relates to a device (10) for lifting holders such as a container (V), comprising:

- a carrier body (9),
- a hooking member (8) fixed to the carrier body (9) for hooking to a part of the holder (V) suitable for this

- purpose,
- a support member (1) fixed to the carrier body (9) for supporting at least a side of the holder (V) when this latter is situated in a horizontal position in the lifting device (1).

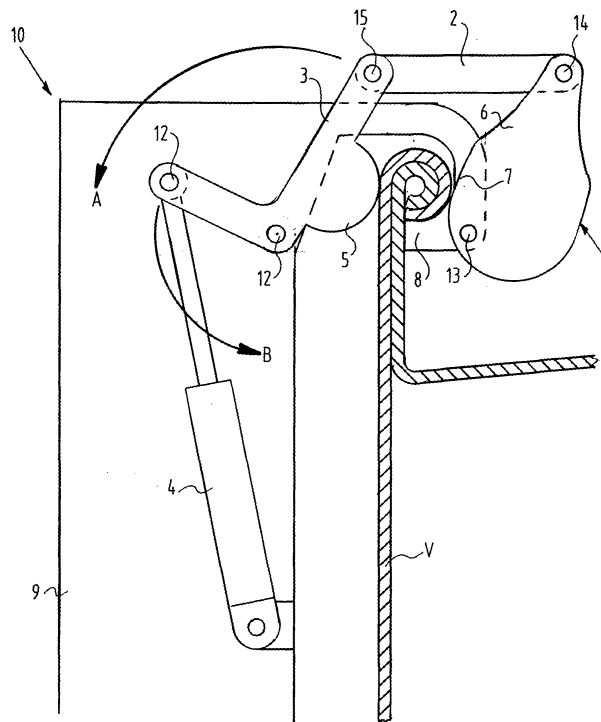


FIG. 1

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] 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, comprising:

- a carrier body,
- a hooking member fixed to the carrier body for hooking to a part of the holder suitable for this purpose,
- a support member fixed to the carrier body for supporting at least a side of the holder when this latter is situated in a horizontal position in the lifting device.

[0004] 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.

[0005] 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.

[0006] 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.

[0007] An embodiment 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.

[0008] 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.

[0009] The press-out member and/or 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.

[0010] 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.

[0011] 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 horizontal position.

[0012] 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.

[0013] 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.

[0014] 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.

[0015] Lever 3 rotates about shaft 12 when the piston of the drive cylinder moves. Shafts 12,15 herein substantially follow arrows A and B.

[0016] 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.

[0017] 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.

[0018] 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.

[0019] 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.

[0020] 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 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.

[0021] 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.

[0022] In the figures "F" symbols indicate where in the shown orientation the cask presses against the diverse components of the lifting device.

[0023] The present invention is not limited to the shown and described embodiments. 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. The rights sought are defined by the appended claims.

Claims

1. Device for lifting holders such as a container, comprising:

- a carrier body,
- a hooking member fixed to the carrier body for hooking to a part of the holder suitable for this purpose,
- a support member fixed to the carrier body for supporting at least a side of the holder when this latter is situated in a horizontal position in the lifting device.

2. Device as claimed in claim 1, comprising 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.

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

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

5. Device as claimed in one or more of the foregoing claims, comprising a press-out member for pressing the holder out of the hook.

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

7. Device as claimed in claim 6 or 7, wherein the press-out member and/or the press-in member is coupled to the carrier body via a drive unit and pivot means coupled thereto.

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

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

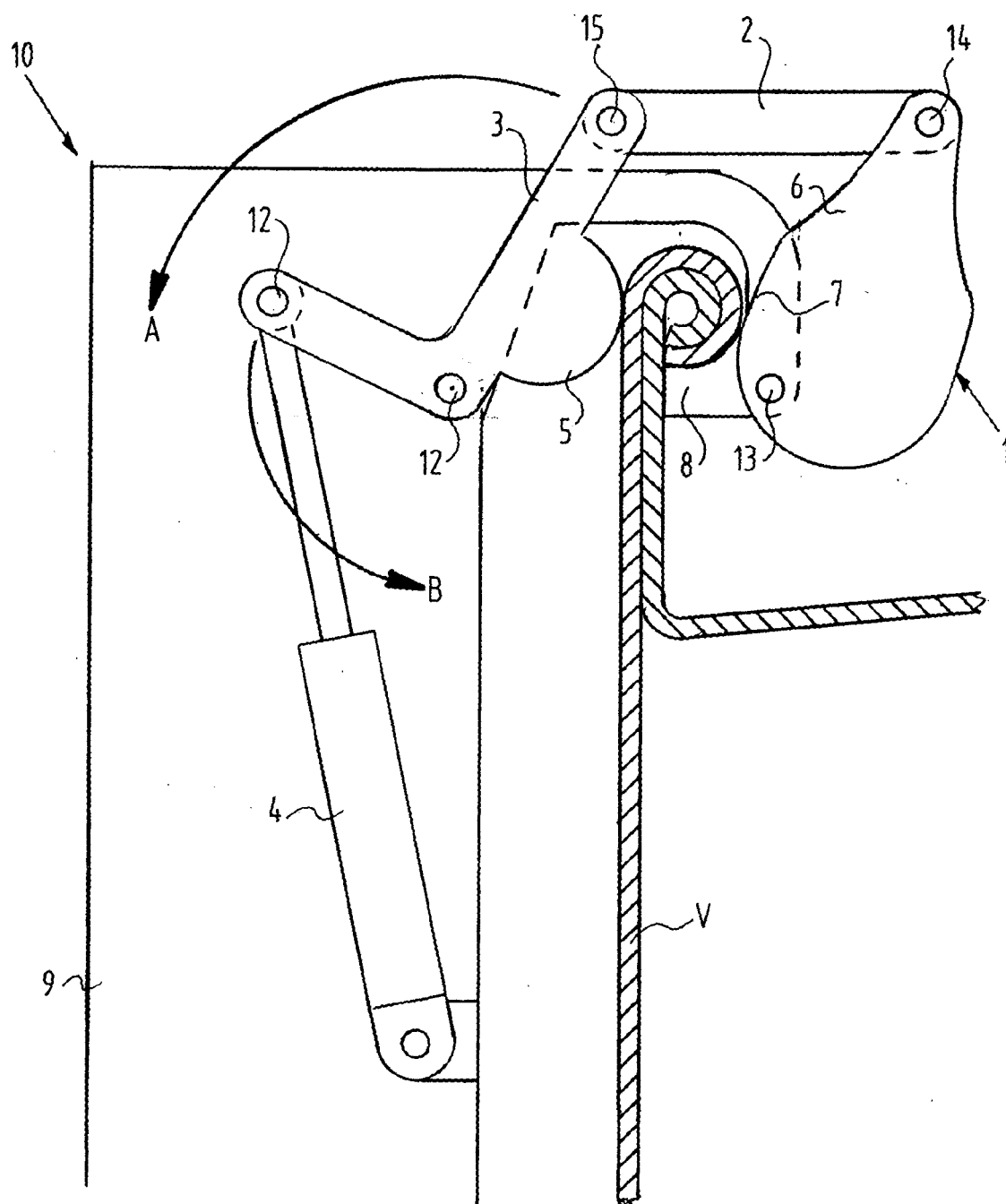


FIG. 1

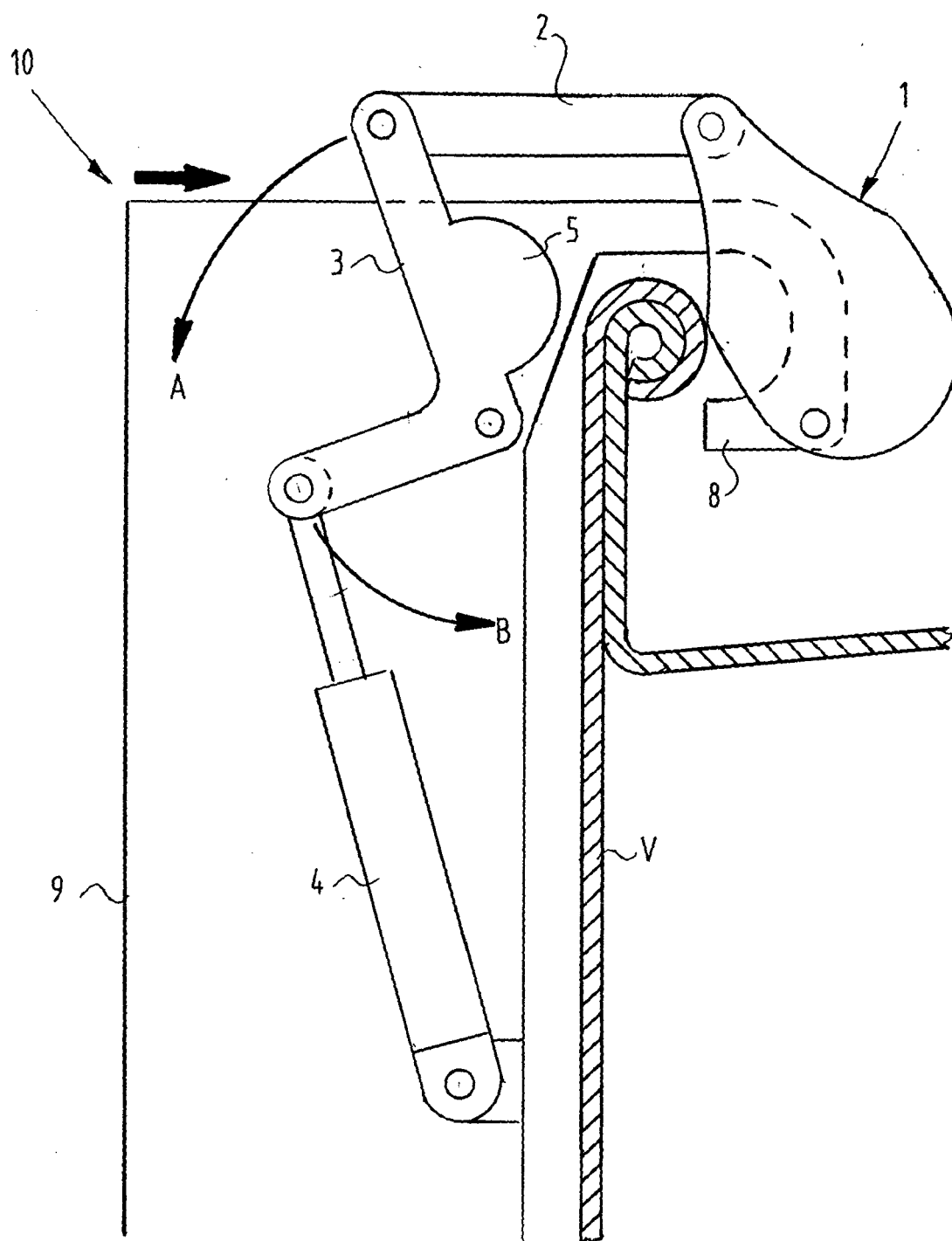


FIG. 2

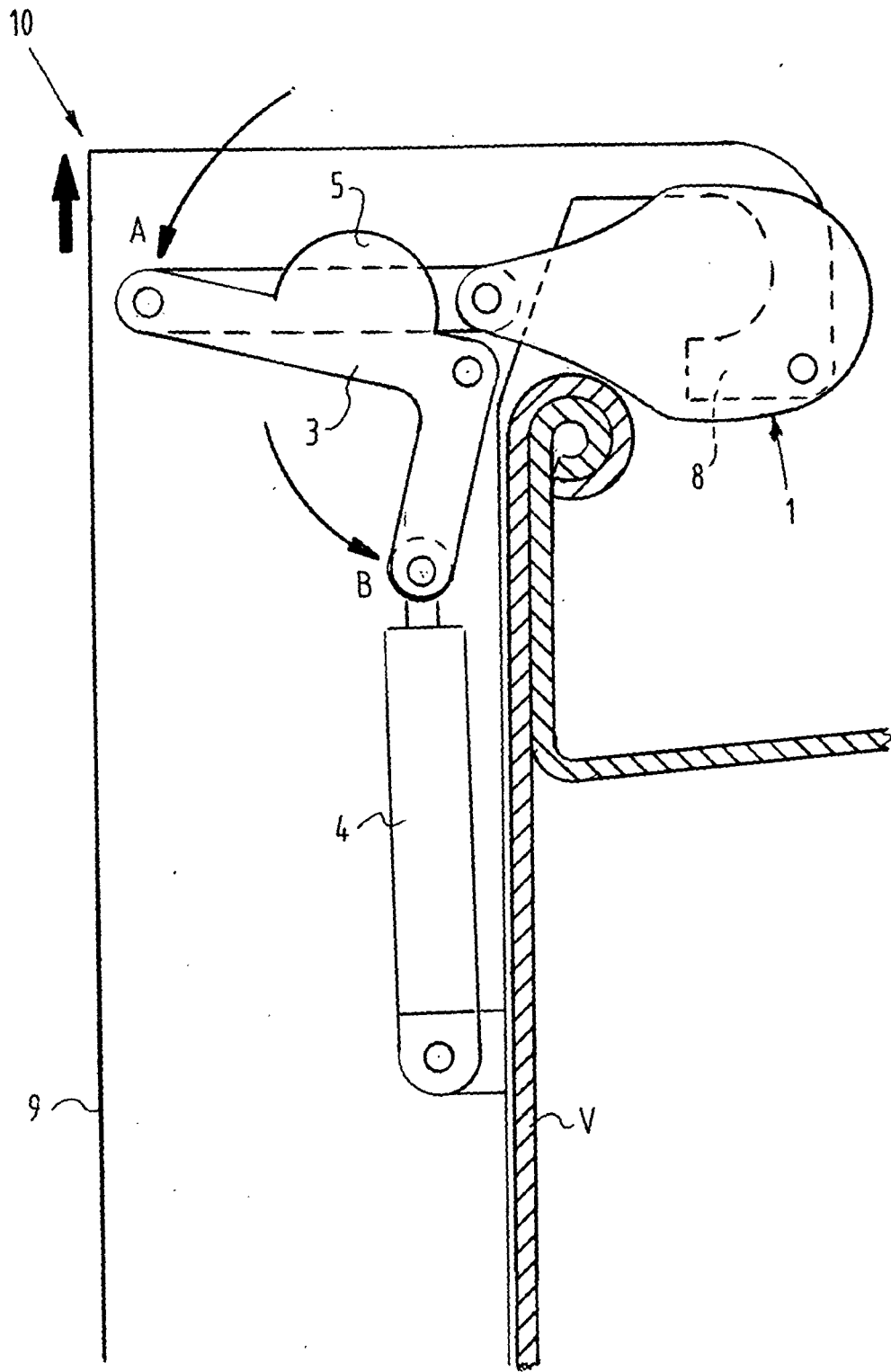


FIG. 3

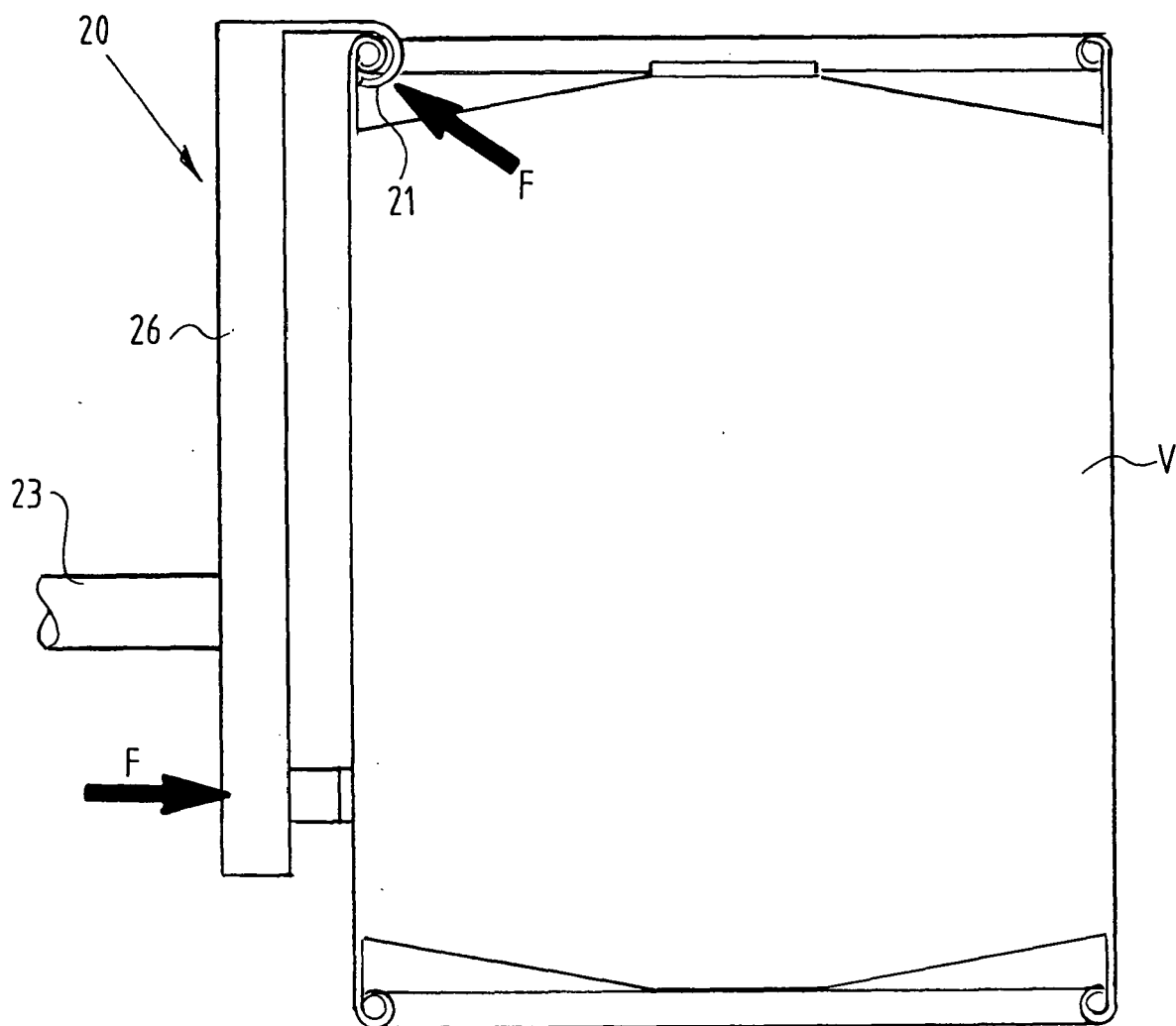


FIG. 4

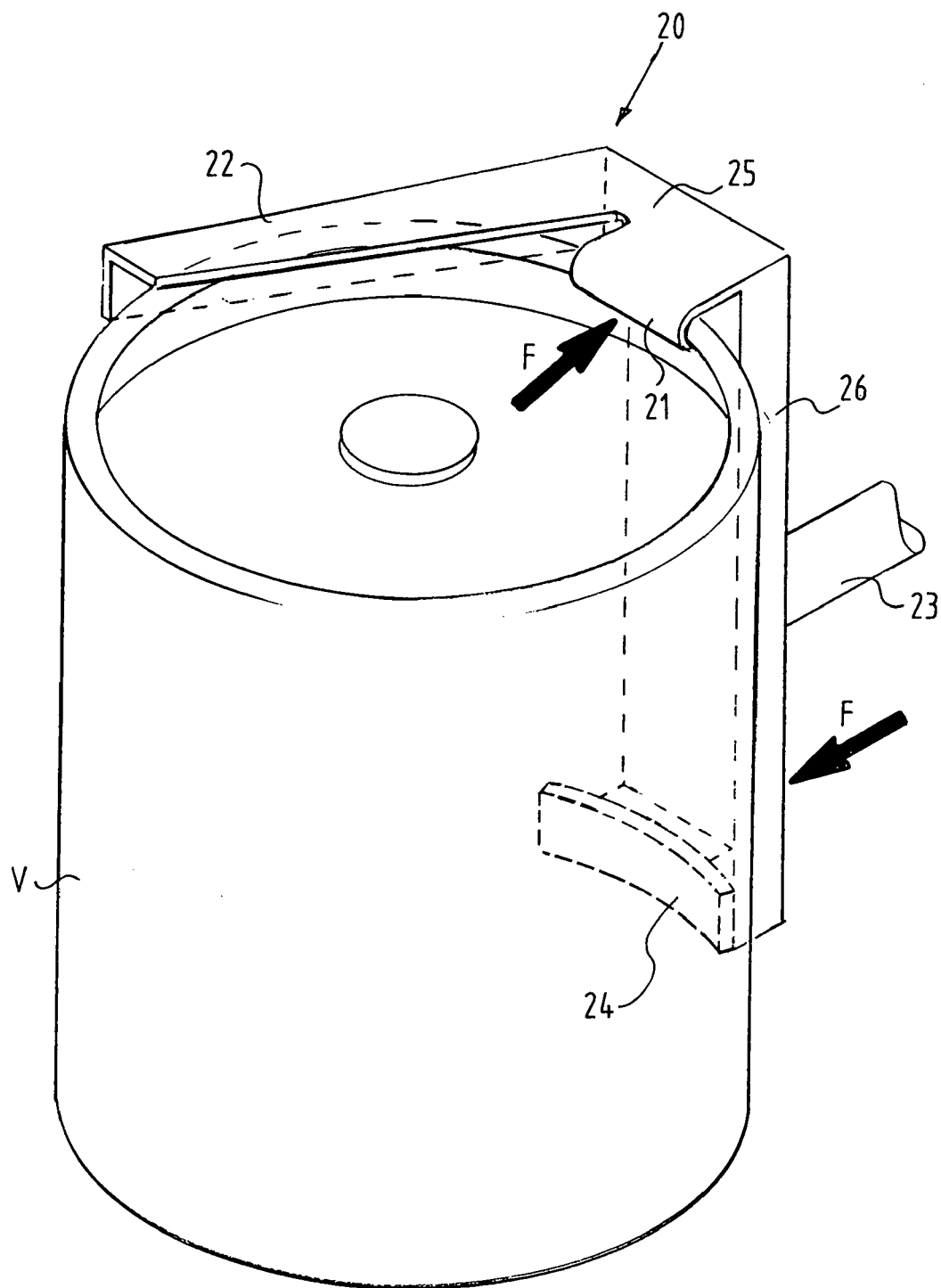


FIG. 5

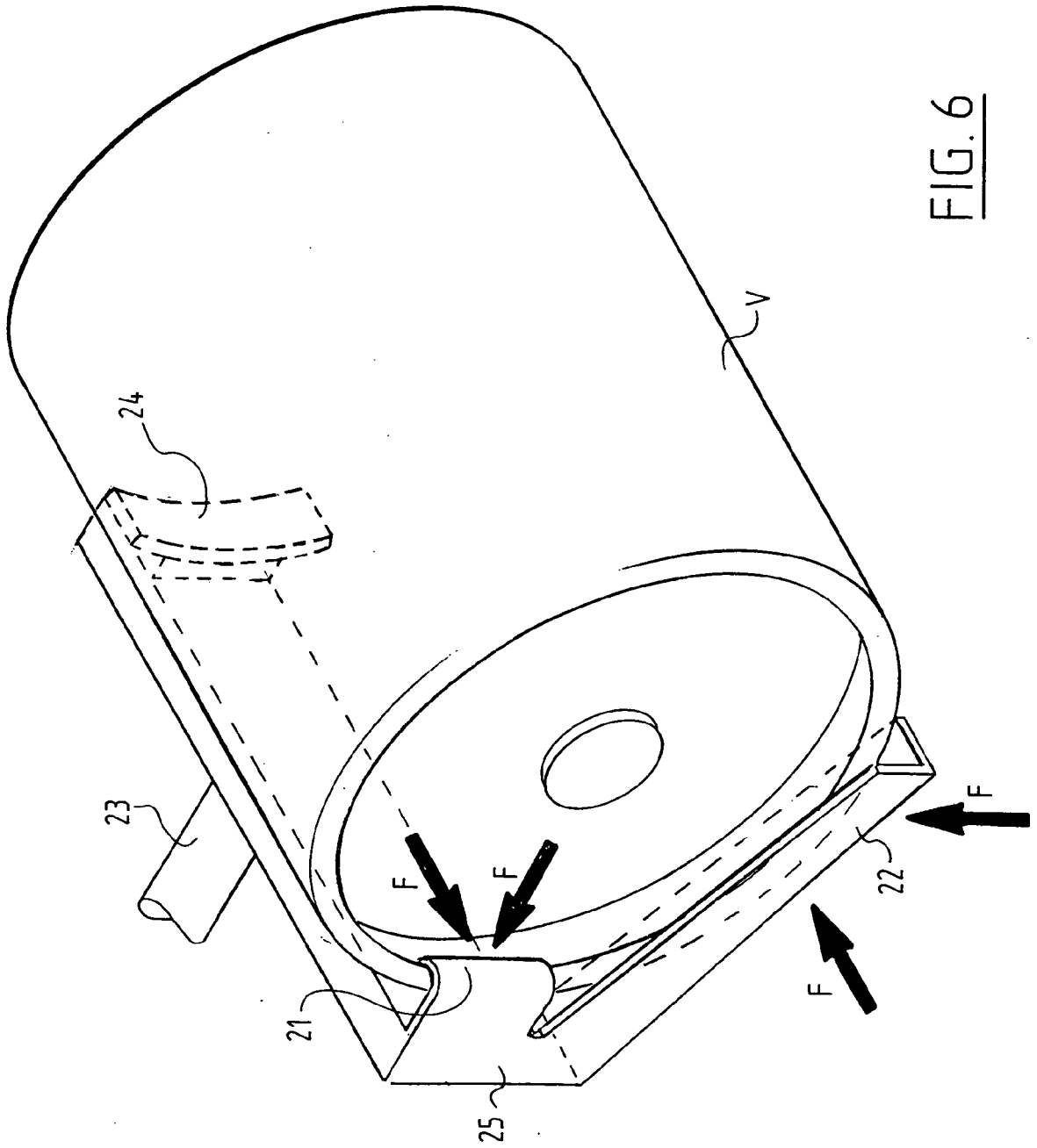


FIG. 6

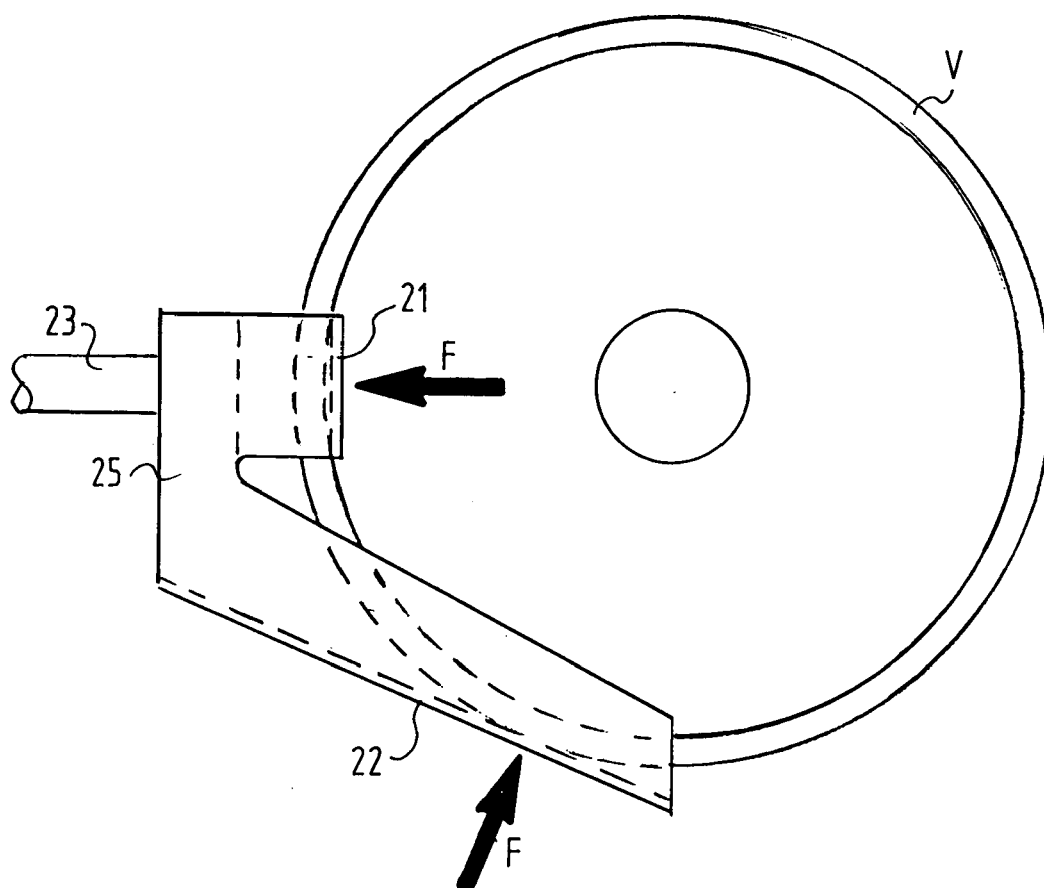


FIG. 7