(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 762 278 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
18.01.2017 Bulletin 2017/03

(51) Int Cl.:
A62C 33/04 *(2006.01)*

(21) Application number: **05108289.9**

(22) Date of filing: **09.09.2005**

(54) **Transportable storing device with loading bay for storing a flexible hose**

Tragbares Lagerungsgerät mit einem Behälter zur Aufbewahrung eines Schlauches

Dispositif transportable de stockage avec un dispositif de rangement pour tuyau flexible

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

(43) Date of publication of application:
14.03.2007 Bulletin 2007/11

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EP 1 762 278 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The invention relates to a transportable storage device, comprising a loading bay and a flexible hose, for example a fire hose, in a folded fashion, the loading bay having an opening at the back.

[0002] Such transportable storage devices, which are usually mounted on a road vehicle are known. The known vehicles are employed for recovering a fire hose after use. Hoses of this type are made up of a plurality of flexible hose sections which are provided with rigid couplings at both ends. Such vehicle is provided with an installation for taking up a flexible hose which has been laid out on the ground into the loading bay.

[0003] The retraction installation takes up the hose from the ground and transfers it into the loading bay where it is stored and folded in a zigzag like manner along the length of the loading bay. The loading bay may accommodate up to several kilometres of hose. The vehicle is driven along the fire hose at a speed which essentially corresponds to the speed at which the fire hose is taken up. The back of the loading bay has an opening for unloading the hose, the opening being closeable by doors

[0004] US 3,601,038 relates to an automatic retraction apparatus for a fire hose and discloses an apparatus which can be installed in any hose cart for automatically retracting long hoses. While the hose is being retracted it is squeezed flat to drain out water and to shape it properly for compact storage in a cart. The long hose is stored in the hose cart in orderly side by side straight courses with folds at opposite ends, the folds being directed to the cart's opening from where the hose is retracted.

[0005] A prior art transportable storage device according to the preamble of claim 1 is disclosed in DE-A-4221870. This prior art storage device has compartments the width of which is about equal to the width of a hose and a coupling. The hoses may be accommodated in the compartments in a rolled up fashion. By means of a narrowing near the bottom or near the top of the compartment, the rolled up hoses are stabilized.

[0006] A problem with the known transportable storage device is the instability of the hose package in the loading bay. The hose is laid down in the loading bay in a folded manner, the hose forming a hose package. The hose package is spaced apart from the doors which close the opening at the back of the loading bay, so as to prevent bulging out of the hose package when opening the doors, which would impede closing of the doors. However, because of the space between the hose package and the doors of the loading bay, the folded parts of the hose are prone to shifting due to the movement of the loading bay during transport. In particular upon unloading the loading bay from the vehicle, in which process the loading bay is tilted backwards, the hose package may shift in such a way that it abuts the door. Especially the folded parts of the hose that lie near the top of the hose package are likely to shift because they are not fixated due to friction by the weight of the hose package.

[0007] The aim of the invention is therefore to provide a transportable storage device as described above which provides for a more steady fixation of the hose package in the loading bay.

[0008] This aim is achieve by the characterizing features of claim 1. This narrowing provides an abutment and provides a compressing action on the hose package when it shifts towards the opening. An inwardly compressing action on the folded parts of the hose is obtained at the narrowing. The hose parts are pressed against each other and are thereby fixated due to friction.

[0009] Preferably, in this connection, the narrowing section of the loading bay provides a gradual reduction of an internal cross-sectional dimension of the loading bay. Moreover, this has the advantage that the rigid couplings at the end of the hose sections will slide past the narrowing essentially unobstructed, when removing the hose through the opening at the back of the loading bay.

[0010] The narrowing can be applied according to several possible embodiments. According to a first possibility, the narrowing may extend over at least part of the height of the loading bay. In particular, good results are obtained in case the narrowing extends over the upper part of the loading bay only, that is at a distance spaced apart from the floor of the loading bay.

[0011] Such location of the narrowing will also stabilize the hose package, despite the reduces extent of said narrowing. The lower part of the hose package is fixated anyway due to the load exerted thereon by the upper part of the hose package and the fiction which is generated as a result thereof in said lower part. However, the loosely packed upper part or middle part of the hose package tends to shift away upon tilting of the loading bay, and at precisely those heights the advantageous effect of the narrowing comes into play.

[0012] The narrowing may be positioned at different locations along the length of the loading bay. Preferably, the narrowing is at or near the opening of the loading bay. At that location, the narrowing provides an obstruction which draws the loops in the hose package closer together and prevents them from falling out through the opening. However, the beneficial effect of the narrowing is also obtained in case said narrowing is somewhere in between the back end opening and the front end of the loading bay.

[0013] Also at that location, the narrowing has the effect of drawing the loops, in particular in the upper ones as explained before, closer together so as to enhance the mutual friction therein as well as between the loops and the walls of the loading bay. As an example, this effect is obtained in case the narrowing is positioned somewhere in the middle between the front end and the back end of the loading bay.

[0014] The gradual reduction in width is readily obtained by providing a guiding element, such as a guide plate, on at least one of the sidewalls of the loading bay, near the closeable opening thereof, which extends obliquely into the loading bay. The guide plate may be sup-

ported by a strip which is adapted to the corresponding wall of the loading bay for example by providing notches for accommodating the various devices on said wall, like hinges, locks etc.

[0015] Preferably the loading bay is removably mounted on the vehicle chassis, for example on a support which is tiltable, the loading bay being slideable with respect to the support for loading/ unloading the loading bay on the vehicle. Such a construction is well known in the art.

[0016] Especially when using a tiltable support for the loading bay it is of importance to space apart the hose package from the doors. The hose package has considerable weight, would it rest against the doors during tilting of the loading bay, usually more than 35°, the doors could not be closed again after they have been opened.

[0017] The retraction installation for taking up the hose is usually mounted on the vehicle. Alternatively however, said installation may also be mounted on the storing device.

[0018] The invention also relates to a loading bay as described above.

[0019] The invention will now be described referring to the accompanying figures, wherein:

Figure 1 shows, partially in cross section, a vehicle according to the invention.
Figure 2 shows a top view of the loading bay according to the invention.
Figure 3 shows a partial perspective view of the back of the loading bay.

[0020] The vehicle 1 according to the invention shown in figure 1 comprises a loading bay 2 for storing a flexible hose 3. The hose which has been laid out on the ground 4 is taken up and transferred into the loading bay 2 by means of retraction installation 5. The loading bay has a closeable opening 6 at the back for unloading the hose.

[0021] The hose 3 is made up of a plurality of flexible hose sections 9 which are provided with rigid couplings 10 at both ends

[0022] The hose 3 is stored in a folded manner, forming a hose package 7. As can be seen in figure 2, the hose package 7 is spaced apart from the doors 8 at the back of the loading bay 2 to prevent the hose from bulging out when opening the doors 8, and to prevent overloading the doors 8 when tilting the loading bay 2 backwards upon unloading it from the vehicle 1.

[0023] The loading bay 2 comprises a container 11 which is removably mounted on the vehicle 1. In this embodiment the container is slideable with respect to a tiltable support 12. For unloading the container 11 from the vehicle, the support 12 is tilted backwards and the container is slid of the support.

[0024] Figure 2 shows the container 11 having a narrowing 13 towards the back near the closeable opening 6. This narrowing provides an abutment and provides an inwardly compressing action on the hose package 7 when it shifts towards opening 6, thereby pressing the folded parts of the hose against each other and holding them due to friction.

[0025] The narrowing section 13 of the container 11 provides a gradual reduction in width of the loading bay 2 so as to promote the compressing action. In addition, this has the advantage that the rigid couplings 10 at the end of the hose sections 9 will slide past the narrowing 13 essentially unobstructed, when removing the hose 3 through the opening 6 at the back of the container 11.

[0026] The narrowing is obtained by guiding elements comprising guide plates 14 provided on the side walls of the container 11, near the closeable opening 6 thereof. The guide plates 14 extend obliquely into the loading space of the container 11, and are supported by a strip 15. This strip is adapted to the corresponding wall of the container by providing notches 16 for accommodating the various devices on said wall, like the lock 17. Alternatively, the narrowing may be carried out as a plastic insert, or may be integrated in the walls of the container 11.

[0027] The guiding elements may extend over just the upper part of the height of the container 11, thus acting on just the upper part of the hose package 7, as the lower part of the hose package 7 will already be fixated due to friction caused by the weight of the upper part of the hose package 7.

[0028] Although in the foregoing reference has been made to the application of the transportable storage device on a lorry, the invention is not limited to such application. For instance, the transportable storage device according to the invention can also be accommodated on board a ship, or can be transported by means of an aircraft, hoovercraft etc.

Claims

1. Transportable storage device, comprising a loading bay (2) and a flexible hose (3), for example a fire hose, stored in the loading bay, the loading bay having an opening (6) at the back and an internal narrowing (13) towards the opening, **characterized in that** the hose is stored in folded fashion forming loops, **in that** the narrowing provides a gradual reduction in width of the loading bay and **in that** the narrowing has the effect of drawing the loops closer together when the hose package (7) shifts towards the opening (6), so as to enhance the mutual friction therein as well as between the loops and the walls of the loading bay.

2. Device according to claim 1, wherein the narrowing (13) of the loading bay (2) provides a gradual reduction of an internal cross-sectional dimension of the loading bay.

3. Device according to one of the preceding claims, wherein the narrowing (13) extends over at least part

of the height of the loading bay (2).

4. Device according to one of the preceding claims, wherein the narrowing (13) extends at least spaced apart from the floor of the loading bay (2).

5. Device according to one of the preceding claims, wherein the narrowing (13) extends over the upper part of the loading bay (2).

6. Device according to one of the preceding claims, wherein the narrowing is at or near the opening (6) of the loading bay (2).

7. Device according to one of the preceding claims, wherein the narrowing is between the back end opening and the front end of the loading bay (2).

8. Device according to one of the preceding claims, wherein a guiding element (14) is provided on at least one of the sidewalls of the loading bay (2), which extends obliquely into the loading bay.

9. Device according to claim 8, wherein a guiding element (14) is provided at both sidewalls of the loading bay (2).

10. Device according to claim 9 wherein a support (15) is located at the back of each guide plate (14), the support being adapted to the corresponding wall of the loading bay (2).

11. Device according to claim 10, wherein the guide plate (14) is supported by means of a supporting strip (15).

12. Device according to any of the preceding claims, wherein an installation (5) for taking up a flexible hose which has been laid out on the ground into the loading bay is mounted on the loading bay (2).

13. Vehicle provided with a transportable device according to one of the preceding claims, wherein the loading bay (2) is mounted on the vehicle chassis.

14. Vehicle according to claim 13, wherein the vehicle chassis is provided with a tiltable support (12), the loading bay (2) being slideable with respect to the support for loading/ unloading the loading bay on the vehicle (1).

15. Vehicle according to claims 13 or 14, wherein the loading bay (2) comprises a container (11).

16. Vehicle according to one of claims 13-15, wherein an installation (5) for taking up a flexible hose which has been laid out on the ground into the loading bay is mounted on the vehicle chassis.

17. Loading bay for a vehicle according to claims 13, 14 or 15, the loading bay (2) having a closeable opening (6) at the back, **characterized in that** the loading bay has a narrowing (13) towards the back near the closeable opening.

Patentansprüche

1. Transportable Lagerungsvorrichtung, umfassend eine Ladenische (2) und einen flexiblen Schlauch (3), zum Beispiel einen Feuerwehrschlauch, der in der Ladenische gelagert ist, wobei die Ladenische eine Öffnung (6) auf der Rückseite und eine innere Verengung (13) zur Öffnung hin hat, **dadurch gekennzeichnet, dass** der Schlauch auf gefaltete, Schlaufen bildende Weise gelagert ist, dass die Verengung eine allmähliche Breitenreduzierung der Ladenische bereitstellt, und dass die Verengung die Wirkung hat, die Schlaufen enger zusammenzuziehen, wenn sich das Schlauchpaket (7) zur Öffnung (6) hin verlagert, um die gegenseitige Reibung in diesem sowie zwischen den Schlaufen und den Wänden der Ladenische zu verstärken.

2. Vorrichtung nach Anspruch 1, wobei die Verengung (13) der Ladenische (2) eine allmähliche Reduzierung einer Innenquerschnittsabmessung der Ladenische bereitstellt.

3. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei sich die Verengung (13) über zumindest einen Teil der Höhe der Ladenische (2) erstreckt.

4. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei sich die Verengung (13) zumindest vom Boden der Ladenische (2) beabstandet erstreckt.

5. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei sich die Verengung (13) über den oberen Teil der Ladenische (2) erstreckt.

6. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei sich die Verengung an oder nahe der Öffnung (6) der Ladenische (2) befindet.

7. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei sich die Verengung zwischen der Öffnung des hinteren Endes und dem vorderen Ende der Ladenische (2) befindet.

8. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei ein Führungselement (14) an mindestens einer der Seitenwände der Ladenische (2) vorgesehen ist, das sich schräg in die Ladenische erstreckt.

9. Vorrichtung nach Anspruch 8, wobei ein Führungselement (14) an beiden Seitenwänden der Ladenische (2) vorgesehen ist.

10. Vorrichtung nach Anspruch 9, wobei sich eine Halterung (15) auf der Rückseite jeder Führungsplatte (14) befindet, wobei die Halterung an die entsprechende Wand der Ladenische (2) angepasst ist.

11. Vorrichtung nach Anspruch 10, wobei die Führungsplatte (14) mittels eines Halterungsbands (15) gehaltert ist.

12. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei ein Einbau (5) zum Aufnehmen eines flexiblen Schlauchs, der in die Ladenische ein- und am Boden ausgelegt wurde, auf der Ladenische (2) angebracht ist.

13. Fahrzeug, das mit einer transportablen Vorrichtung nach einem der vorhergehenden Ansprüche versehen ist, wobei die Ladenische (2) am Fahrzeugchassis angebracht ist.

14. Fahrzeug nach Anspruch 13, wobei das Fahrzeug mit einer kippbaren Halterung (12) versehen ist, wobei die Ladenische (2) in Bezug auf die Halterung gleitbeweglich ist, um die Ladenische auf das/vom Fahrzeug (1) zu laden/entladen.

15. Fahrzeug nach den Ansprüchen 13 oder 14, wobei die Ladenische (2) einen Behälter (11) umfasst.

16. Fahrzeug nach einem der Ansprüche 13 bis 15, wobei ein Einbau (5) zum Aufnehmen eines flexiblen Schlauchs, der in die Ladenische ein- und am Boden ausgelegt wurde, auf dem Fahrzeugchassis angebracht ist.

17. Ladenische für ein Fahrzeug nach den Ansprüchen 13, 14 oder 15, wobei die Ladenische (2) eine verschließbare Öffnung (6) auf der Rückseite hat, **dadurch gekennzeichnet, dass** die Ladenische eine Verengung (13) zur Rückseite hin nahe der verschließbaren Öffnung hat.

Revendications

1. Dispositif de stockage transportable, comprenant une baie de chargement (2) et un tuyau flexible (3), comme par exemple une lance à incendie, stocké dans la baie de chargement, la baie de chargement ayant une ouverture (6) à l'arrière et un rétrécissement interne (13) vers l'ouverture,
caractérisé en ce que le tuyau est stocké de manière pliée en formant des boucles, **en ce que** le rétrécissement garantit une diminution progressive de la baie de chargement, et **en ce que** le rétrécissement a pour effet de rapprocher les boucles lorsque le paquet du tuyau (7) se décale vers l'ouverture (6), de façon à améliorer le frottement mutuel à l'intérieur, et entre les boucles et les parois de la baie de chargement.

2. Dispositif selon la revendication 1, dans lequel le rétrécissement (13) de la baie de chargement (2) garantit une diminution progressive d'une dimension transversale interne de la baie de chargement.

3. Dispositif selon l'une des revendications précédentes, dans lequel le rétrécissement (13) s'étend sur au moins une partie de la hauteur de la baie de chargement (2).

4. Dispositif selon l'une des revendications précédentes, dans lequel le rétrécissement (13) s'étend au moins de manière espacée par rapport au sol de la baie de chargement (2).

5. Dispositif selon l'une des revendications précédentes, dans lequel le rétrécissement (13) s'étend sur la partie supérieure de la baie de chargement (2).

6. Dispositif selon l'une des revendications précédentes, dans lequel le rétrécissement se trouve au niveau ou près de l'ouverture (6) de la baie de chargement (2).

7. Dispositif selon l'une des revendications précédentes, dans lequel le rétrécissement se trouve entre l'ouverture d'extrémité arrière et l'extrémité avant de la baie de chargement (2).

8. Dispositif selon l'une des revendications précédentes, dans lequel un élément de guidage (14) est prévu sur au moins l'une des parois latérales de la baie de chargement (2), qui s'étend à l'oblique dans la baie de chargement.

9. Dispositif selon la revendication 8, dans lequel un élément de guidage (14) est prévu au niveau des deux parois latérales de la baie de chargement (2).

10. Dispositif selon la revendication 9, dans lequel un support (15) est situé à l'arrière de chaque plaque de guidage (14), le support étant adapté à la paroi correspondante de la baie de chargement (2).

11. Dispositif selon la revendication 10, dans lequel la plaque de guidage (14) est supportée à l'aide d'une bande de support (15).

12. Dispositif selon l'une quelconque des revendications précédentes, dans lequel une installation (5) destinée à enrouler un tuyau flexible qui a été posé sur

le sol dans la baie de chargement est montée sur la baie de chargement (2).

13. Véhicule muni d'un dispositif transportable selon l'une des revendications précédentes, dans lequel la baie de chargement (2) est montée sur le châssis du véhicule.

14. Dispositif selon la revendication 13, dans lequel le châssis du véhicule est muni d'un support inclinable (12), la baie de chargement (2) pouvant coulisser par rapport au support afin de charger/de décharger la baie de chargement sur le véhicule (1).

15. Véhicule selon les revendications 13 ou 14, dans lequel la baie de chargement (2) comprend un conteneur (11).

16. Véhicule selon l'une des revendications 13 à 15, dans lequel une installation (5) destinée à enrouler un tuyau flexible qui a été posé sur le sol dans la baie de chargement est montée sur le châssis du véhicule.

17. Baie de chargement destinée à un véhicule selon les revendications 13, 14 ou 15, la baie de chargement (2) ayant une ouverture refermable (6) à l'arrière, **caractérisée en ce que** la baie de chargement possède un rétrécissement (13) vers l'arrière, près de l'ouverture refermable.

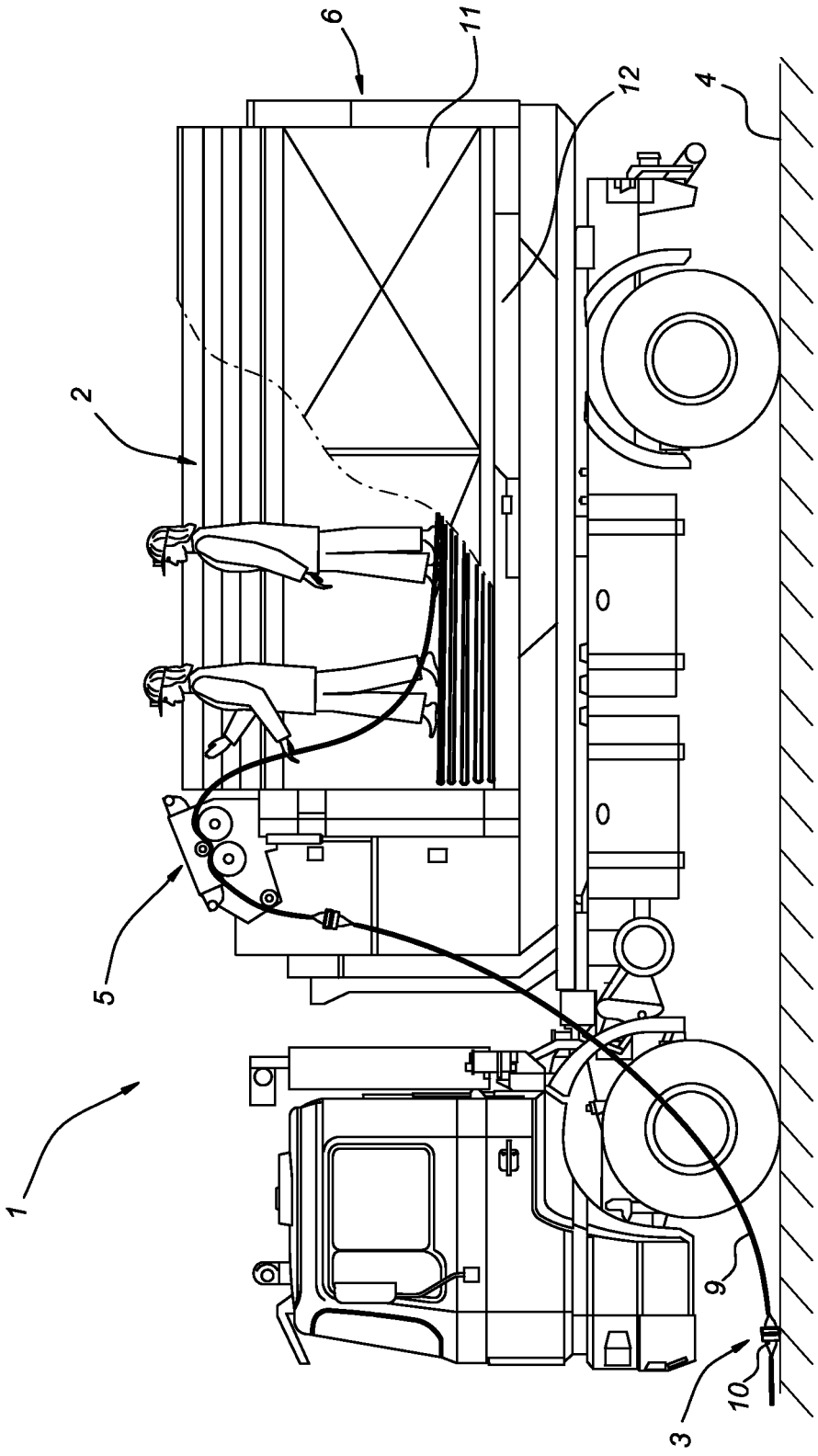


Fig 1

Fig 2

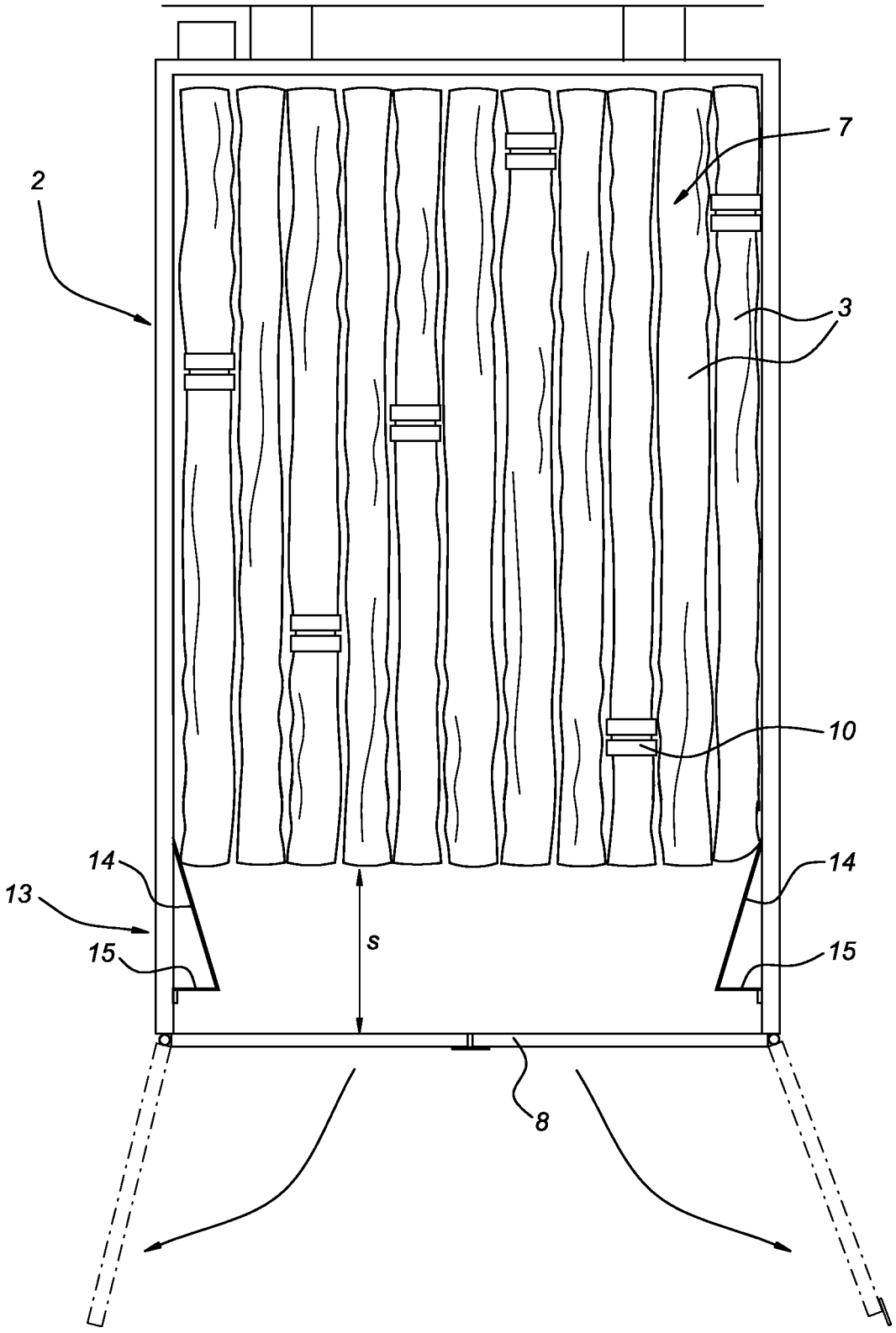
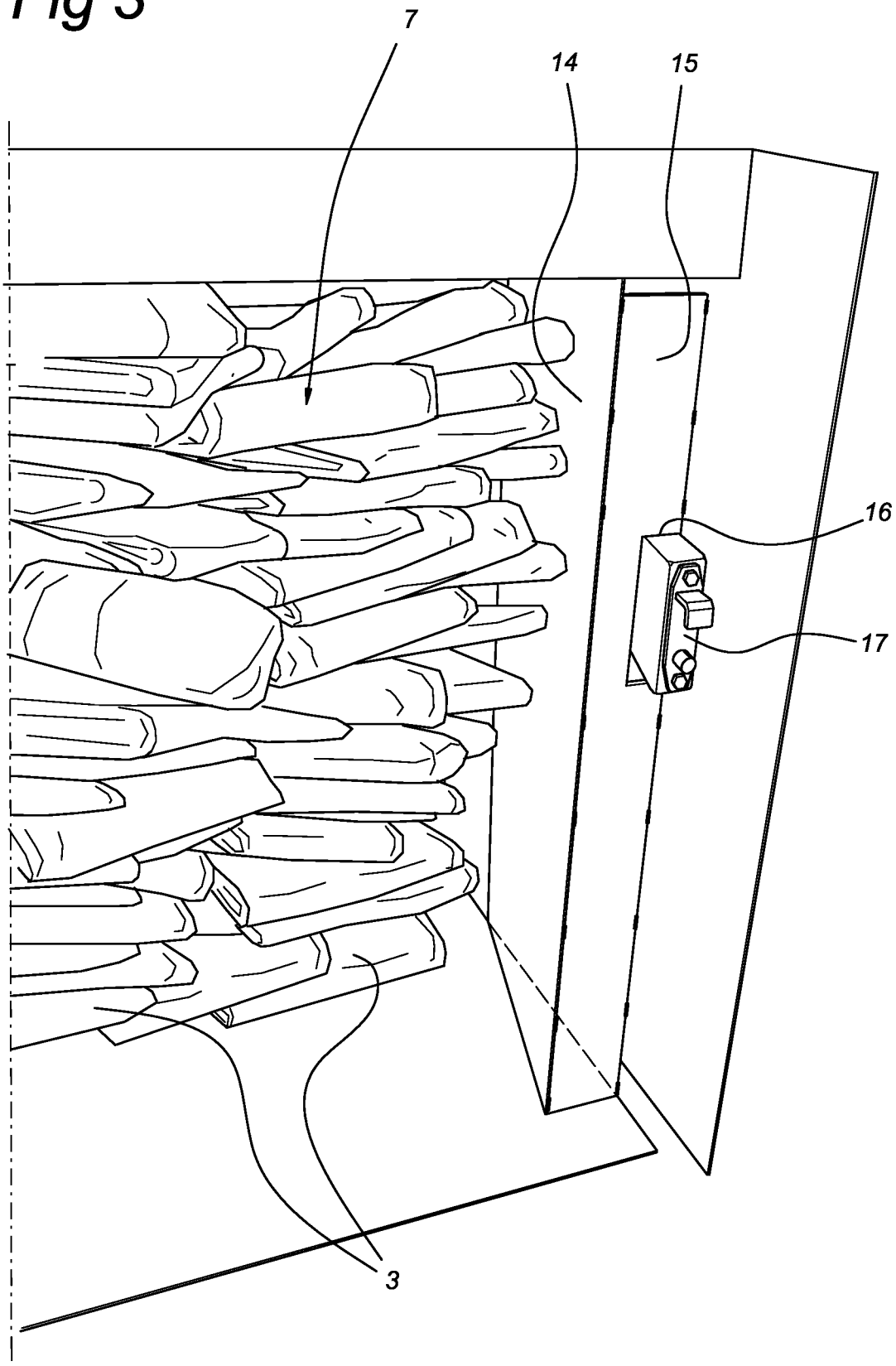


Fig 3



REFERENCES CITED IN THE DESCRIPTION

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