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Eljárás és szerkezet terhek átrakására

Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmas az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.

Method and device for transferring loads

The present invention concerns a method and a device for transferring loads.

More particularly, it concerns a gravitational transfer device of the type comprising a tubular body defining a longitudinal through-passage, this tubular body being, at one of its ends, referred to as the perforating end, configured as a tip to allow piercing of a bag of content to be transferred.

Transferring materials from large-capacity containers, such as "big bags", is problematic, because the latter are extremely difficult to handle. Yet, there are many applications in which it may be necessary to empty this kind of container quickly and easily in order to transfer the content of same, either into containers of smaller dimensions, or in defined locations.

A transfer device for transferring loads, in particular bulk materials, packaged in a bag-type container, is disclosed in document FR-2,895,728. This device comprises a tubular body defining a longitudinal through-passage, this tubular body being, at one of its ends, referred to as the perforating end, configured as a tip to allow piercing of said bag.

One aim of the present invention is therefore to propose a transfer device of the abovementioned type, of which the simple and robust design allows quick and easy gravitational transfer of materials contained in bags, in particular bags of large dimensions.

To this end, the subject of the invention is a transfer device for transferring loads, in particular bulk materials, packaged in a bag-type container, said device comprising a tubular body defining a longitudinal through-passage, this tubular body being, at one of its ends, referred to as the perforating end, configured as a tip to allow piercing of said bag, this tubular body being equipped with at least one member for sealing the passage that is mounted movably between a closed position and an open position of said passage and is provided, on the outer peripheral surface of same, in the zone of the body extending between the sealing member and the perforating end, with tabs, characterized in that the tabs are mounted at least partially movably between a position referred to as an inactive position, close to said body, and a position referred to as an active position, separated from said body, and in that the zone of said body able to be sealed by said sealing member is arranged separated from the open end of the body, at the opposite end from the perforating end of said body, so as to define, between the open end and the sealable zone, a connection zone of said device.

The perforating end of the device allows piercing, from outside, of said bag of content to be transferred and, thereafter, the at least partial insertion of said body into the bag to a position in which the tabs extend to the active position inside the bag after having passed from an active position to an inactive position at the opening through which the body is inserted into the bag, formed by the piercing of said bag. In the active position, the tabs prevent the device from moving out of the bag in an untimely manner.

The presence of a tubular connection zone suitable for allowing the device to be connected, generally by fitting, to a receiving bag or a pipe referred to as a transfer pipe, allows the load to be transferred safely



and quickly from the bag pierced by the device to the receiving bag. This results in a considerable time saving for the user.

Owing to the presence of a sealing member, the transfer can be interrupted at any time, making it possible to control the risk of the receiving bag overflowing. Similarly, the bag perforated by the device can be emptied at a pace and flow rate chosen by the operator.

Preferably, the tabs are elastically deformable tabs equipped with means for returning same to the position separated from said body.

Generally, the return means of a tab are produced integrally with the tab and are formed by the elasticity of said tab, which tends to bring said tab back to a position separated from said body. Therefore, the tabs can be folded against the body to a position pressing against said body when the body is partially inserted inside the bag, before being redeployed by separating from said body, once inserted inside the bag. In this separated position, they are capable of coming to bear on the internal wall of the bag and of keeping at least a part of the body inside said bag, so as to prevent the device from moving out of the bag in an untimely manner.

Preferably, the tabs are blade-type tabs arranged in a manner radiating out from said body and are inclined with their free ends further away from the perforating end of the body than their ends that are connected to the body.

Preferably, at least some of the tabs are arranged at the same level on the outer peripheral surface of said body and at least some of the tabs are associated with a through-opening of the body arranged, on the outer peripheral surface of the body, between the tab and the perforating end of the body.

The presence of these through-openings allows the bag to be almost completely emptied.

Preferably, the tip of the perforating end has a generally conical appearance, which facilitates the piercing of the bag and the partial penetration of the device into the bag.

Preferably, the sealing member is a pivoting sealing member mounted pivotably about an axis that is preferably parallel to the longitudinal axis of the passage defined by said body.

Such pivoting mounting makes it possible to easily obtain a sealing member with adjustable flow rate.

Preferably, the tubular body is divided into at least two segments each provided, at one end, with an outer peripheral flange, said flanges being positioned opposite one another in the coupled state of said segments while defining a free space between one another that is able to be at least partially occupied by said sealing member. One of the flanges also forms a stop that limits the insertion of the body into the bag to be emptied.

Preferably, the flanges are, in the coupled state of said segments, joined to one another by screwing, one of the screw bodies forming the axis around which the sealing member is pivotably mounted. This results in a simplification of the structure.

Preferably, the body is equipped with a gripping handle arranged at the zone of said body able to be sealed by said sealing member. This handle further forms a visual marker means indicating the open or closed position of the sealing member.

Preferably, the device comprises a fastener, such as a link, a strap, or a collar able to be positioned around the connection zone in particular to allow a container referred to as a receiving container to be held in the state fitted, via its onto the connection zone of the device.

Preferably, the end of the body at the opposite end from the perforating end is provided with an outer peripheral flange. This flange forms a stop preventing the fastener from sliding off the end of said body. This flange also helps prevent material from building up around the connection zone of the device during the transfer phase.

A further subject of the invention is a method for transferring loads, in particular bulk materials, packaged in a bag-type container using a device as mentioned above, said method comprising, in the closed position of the sealing member, a step of perforating said bag, preferably at the bottom of the bag, using the perforating end of the device, until the perforating end and at least some tabs are inserted inside said bag, a step of opening the sealing member, and if necessary, at least before the step of opening the sealing member, a step of fastening a container referred to as a receiving container or a guide conduit at the connection zone of the device.

The invention will be clearly understood from reading the following description of embodiments, with reference to the appended drawings in which:

- Figure 1 shows a front view of a device according to the invention in the use position, the bags between which the transfer of loads takes place having been portrayed as transparent in order to display the parts of the device arranged inside the bags;
- Figure 2 shows a perspective view of a device with the sealing member in the open position;
- Figure 3 shows a top view of the device of Figure 2;
- Figure 4 shows a perspective view of a device with the sealing member in the closed position;
- Figure 5 shows a top view of the device of Figure 4.

As mentioned above, the transfer device 1 that forms the subject of the invention is more particularly intended for transferring loads, in particular bulk materials, such as powdered materials or granules packaged in bags 20, in particular bags of large dimensions, also referred to as "big bags", to bags referred to as receiving bags 21 of smaller dimensions, or to predefined storage zones.

The example shown illustrates the transfer of loads from a bag 20 of large dimensions to a tubular bag 21 of smaller dimensions that is subsequently used, for example, as ballast for a covering element in a silage silo.

This transfer device 1 therefore comprises a tubular body 2 defining a longitudinal through-passage 5. In the examples shown, this body 2 is made from metal. One of the ends of said body denoted with

reference number 3 in the figures is configured as a tip that has a generally conical appearance. This perforating end 3 in the form of a tip is produced here using inclined arms converging from the peripheral edge of said body towards the free end of the tip.

The device further comprises a sealing member 4 for sealing the passage 5. In the example shown, the sealing member 4 is a pivoting sealing member mounted pivotably about an axis that is substantially parallel, i.e. parallel to within ten degrees, to the longitudinal axis of the passage 5 defined by said body in order to move said sealing member 4 between an open position and a closed position of said passage. This sealing member 4 comprises a plate 41 provided with a lateral perforation for pivotably mounting said sealing member and a manoeuvring rod 42 radial to the plate.

The tubular body 2 is, for its part, divided into at least two segments each provided, at one end, with an outer peripheral flange 9, said flanges 9 being positioned opposite one another in the coupled state of said segments while defining a free space 10 between one another that is able to be at least partially occupied by said sealing member 4.

The flanges 9 are, in the coupled state of said segments, joined to one another by screwing, one of the screw bodies 11 forming the axis around which the sealing member 4 is pivotably mounted.

In the open position of the passage 5, the plate 41 extends mainly outside the perimeter defined by the tubular body 2. In the closed position of the passage 5, the plate 41 extends mainly inside the perimeter defined by the tubular body 2 in a position shown by dotted lines in Figure 5. Therefore, as it moves from the closed position to the open position, said sealing member gradually opens the passage 5, allowing the flow rate to be adjusted.

In the example shown, the body 2 is equipped with a gripping handle 12 arranged at the zone 15 of said body 2 able to be sealed by said sealing member 4. In the closed position, the handle 12 and the manoeuvring rod of the sealing member extend in diametrically opposite directions. It is therefore easy for the operator to visually identify the closed position of the sealing member. In order to gradually open the passage 5, the manoeuvring rod 42 is moved gradually towards the handle 12.

The sealing member could also have been produced in the form of a sealing member pivoting about an axis perpendicular to the longitudinal axis of said passage, but this solution is less practical.

The transfer device 1 further comprises, on the outer peripheral surface of the body 2, in the zone of the body 2 extending between the sealing member 4 and the perforating end 3, tabs 6, in this case four tabs 6 mounted at least partially movably between a position referred to as an inactive position, close to said body 2, and a position referred to as an active position, separated from said body 2.

These tabs 6 are elastically deformable tabs equipped with a means for returning same to the position separated from said body 2.

In the example shown, each tab forms one of the branches of an angled part, the other branch of which forms the part attaching the tab to the body. This attachment part is applied to the outer peripheral surface of the body, and held in position against the body by screwing, riveting or the like.

In the example shown, said tabs 6 are arranged at the same level on the outer peripheral surface of said body 2 and are each associated with a through-opening 8 of the body 2 arranged, on the outer peripheral surface of the body 2, between the tab 6 and the perforating end 3 of the body 2.

Each tab 6 is angularly offset from another tab by 90°. These tabs are pressed against the outer peripheral surface of the body during the insertion of the body into the bag, at the opening in the bag 20, before being redeployed once they have passed through the insertion opening into the bag, as shown in Figure 1, in which the tabs are in an active position that prevents the device from moving out in an untimely manner through the perforation opening through which it was inserted into the bag.

The device further comprises a tubular connection zone 7 of the device, arranged between the open end 14 of the body at the opposite end from the perforating end 3 of the body and the sealable zone 15 of said body.

This connection zone 7 is formed by the part of the body extending between the open end 14 of the body and the sealable zone 15, and allows the connection, generally by fitting, of a receiving bag 21 as illustrated in Figure 1, or a pipe, for example.

In order to hold the receiving bag 21 at this connection zone 7, the device 1 comprises a fastener 16, such as a link, a strap, or a collar able to be positioned, in the same way as a ligature, around the connection zone 7, and around the outer peripheral surface of the neck of the receiving bag fitted via its neck onto said connection zone 7.

In order to improve this attachment, the end 14 of the body 2 at the opposite end from the perforating end 3 is provided with an outer peripheral flange 13 that prevents the fastener from sliding off the end 14 of the tubular body 2.

The transfer of loads between the bag 20 and the receiving bag 21 can, using the device 1 described above, take place as follows: the device 1 is positioned, with its sealing member 4 in the closed position, under the bottom of the bag 20 to be emptied, which is itself held in an elevated position by means of a forklift truck, for example. The device 1 is positioned on the ground with the tubular body in the erected state with its perforating end 3 pointing towards the bottom of the bag. The bag is lowered until the bottom of the bag is perforated by the perforating end 3, which penetrates into the bag as the latter is lowered.

The device continues to be inserted into the bag until the tabs 6 of the body pass into the bag, the tabs remaining close to the body in order to enter the bag before separating from the body in order to keep the device inside the bag. At the opposite end 14 of the body, at the connection zone 7, a receiving bag 21 is attached or has been attached, and the bag 20 is positioned at a height that allows the gravitational flow of the loads from the bag 20 to the bag 21 via the passage 5.

The sealing member 4 can then be opened to allow this gravitational flow.

When the receiving bag 21 is full, the sealing member 4 is returned to the closed position and a new receiving bag 21 can be positioned on the device 1 in order to proceed with a new transfer operation.

When the bag 20 to be emptied has finished emptying, the device 1 can be removed from the bag to be emptied and positioned on a new bag to be emptied.

Eljárás és szerkezet terhek átrakására

Szabadalmi igénypontok

1. Átrakó szerkezet (1) terhek, főként ömlesztett anyagok átrakására, amelyek zsák (20) típusú tárolóeszközbe vannak csomagolva, amely szerkezet (1) egy hosszanti átmenő járatot (5) határoló cső alakú testet (2) tartalmaz, ahol ez a cső alakú test (2) az egyik, úgynevezett perforáló végén (3) csücsként van kiképezve, hogy lehetővé tegye a zsák (20) átszúrását, emellett ez a cső alakú test (2) legalább egy, a járat (5) lezárására alkalmas szervvel (4) rendelkezik, amely a járat (5) lezárt helyzete és nyitott helyzete között mozgathatóan van felszerelve és a külső kerületi felületén fülekkel (6) van ellátva a testnek (2) a lezárószerv (4) és a perforáló vég (3) között húzódó zónájában, *azzal jellemezve*, hogy a fülek (6) legalább részben mozgathatóan vannak felszerelve egy a testhez (2) közeli, úgynevezett inaktív helyzet és egy a testtől (2) távolabb eső, úgynevezett aktív helyzet között, és hogy a testnek (2) a lezárószerv (4) által lezárható zónája (15) a test (2) perforáló végével (3) átellenes nyitott végétől (14) bizonyos távolságra van elrendezve, hogy a nyitott vég (14) és a lezárható zóna (15) között a szerkezet (1) egy csatlakoztató zónáját (7) határozza meg.
2. Az 1. igénypont szerinti szerkezet (1), *azzal jellemezve*, hogy a fülek (6) rugalmasan deformálható fülek, amelyek a testtől (2) távolabb eső helyzetbe viaszállító eszközökkel vannak ellátva.
3. Az előző igénypontok bármelyike szerinti szerkezet (1), *azzal jellemezve*, hogy a fülek (6) közül legalább néhány ugyanazon a szinten van elrendezve a test (2) külső kerületi felületén és hogy a fülek (6) közül legalább néhány a test (2) egy átmenő nyílásához (8) van hozzárendelve, amely a test (2) külső kerületi felületén, a fül (6) és a test (2) perforáló vége (3) között van elrendezve.
4. Az előző igénypontok bármelyike szerinti szerkezet (1), *azzal jellemezve*, hogy a perforáló vég (3) csücsa alapvetően kúpos megjelenésű.
5. Az előző igénypontok bármelyike szerinti szerkezet (1), *azzal jellemezve*, hogy a lezárószerv (4) egy elforgatható lezárószerv, amely egy a test (2) által határolt járat (5) hossz tengelyével párhuzamos tengely körül elforgathatóan van felszerelve.
6. Az előző igénypontok bármelyike szerinti szerkezet (1), *azzal jellemezve*, hogy a cső alakú test (2) legalább két szakaszra van felosztva, amelyek mindegyike az egyik végén egy külső kerület menti gallérral (9) van ellátva, ahol ezek a gallérok (9) egymással szemben helyezkednek el a szakaszok összekapcsolt állapotában, egymás között egy szabad teret (10) határolva, amely alkalmas arra, hogy a lezárószerv (4) legalább részben elfoglalja.



7. Az 5. igényponttal kombinált 6. igénypont szerinti szerkezet (1), *azzal jellemezve*, hogy a gallérok (9) a szakaszok összekapcsolt állapotában, amely szakaszok egymással csavarozással vannak összekötve, a csavartestek (11) egyike képezi azt a tengelyt, amely körül a lezárszerv (4) elforgathatóan van felszerelve.

8. Az előző igénypontok bármelyike szerinti szerkezet (1), *azzal jellemezve*, hogy a test (2) egy megfogó fogantyúval (12) van felszerelve, amely a test (2) lezárszerv (4) által lezárható zónájának (5) környezetében van elrendezve.

9. Az előző igénypontok bármelyike szerinti szerkezet (1), *azzal jellemezve*, hogy a szerkezet (1) egy rögzítőeszközt, mint például egy kötelet, szíjat vagy bilincset tartalmaz, amely felhelyezhető a csatlakoztató zóna (7) köré, hogy lehetővé tegye egy úgynevezett befogadó tárolóeszköz (21) megtartását annak a szerkezet (1) csatlakoztató zónájára (7) a nyakánál ráillesztett állapotában.

10. Az előző igénypontok bármelyike szerinti szerkezet (1), *azzal jellemezve*, hogy a test (2) perforáló véggel (3) átellenes vége (14) egy külső kerületi gallérral (13) van felszerelve.

11. Eljárás terhek, főként ömlesztett anyagok átrakására egy az 1-10. igénypontok bármelyike szerinti szerkezet (1) segítségével, amely anyagok egy zsák (20) típusú tárolóeszközbe vannak becsomagolva, amely eljárás magában foglalja a lezárszerv (4) zárt helyzetében a zsák (20) perforálásának lépését, előnyösen a zsák (20) fenekének környezetében, a szerkezet (1) perforáló végének (3) segítségével, a perforáló végnek (3) és legalább néhány fülnek (6) a zsák (20) belsejébe való bevezetéséig, a lezárszerv (4) nyitásának lépését, és ha szükséges, legalább a lezárszerv (4) nyitási lépése előtt egy úgynevezett befogadó tárolóeszköz (21) vagy egy megvezető csővezeték rögzítési lépését a szerkezet csatlakoztató zónájának (7) környezetében.

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FIG 1



