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(54) **Improved unloading device for the hopper of a mechanical sweeper for large surfaces**

Entladevorrichtung für einen Behälter eines mechanischen Kehrfahrzeuges für grosse Oberflächen

Dispositif de décharge d'une trémie d'une balayeuse mécanique pour des grandes surfaces

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Description

[0001] The present invention relates to an unloading device for the hopper of a mechanical sweeper for large surfaces, such as streets, squares, roadsides or platforms, industrial sheds, or the like.

[0002] Mechanical sweepers for large surfaces are known which have a capacious waste collecting container carried at the end of a system of articulated translating and tilting arms; these containers are frontally provided with an opening having a closure door through which the collected dirt is introduced by one or more large rotating cylindrical brooms.

[0003] These known containers have drawbacks during the emptying step, which usually occurs by turning over the container and unloading the contents in the open: this often raises a large cloud of dust and inconveniently scatters the collected dirt onto the ground.

[0004] The technical aim of the present invention is to obviate the above mentioned drawbacks of known types and to provide an improved unloading device for the hopper of a mechanical sweeper for large surfaces that avoids scattering the dust and the collected materials into the air and onto the ground.

[0005] Within the scope of this technical aim, an object of the present invention is to provide a device that is structurally simple, relatively easy to produce in practice, safe in use, effective in operation, and relatively modest in cost.

[0006] This aim, this object and others are achieved by the present unloading device for the hopper of a mechanical sweeper for large surfaces, characterized in that said hopper has an outlet provided with a hinged door having manually-operated closure means and in that said outlet has, towards the outside, a perimetric lip provided with retention means for the mouth of a throw-away waste containment bag; an elastic clamp being provided above said outlet and retaining the closed end of the bag, which is released simultaneously with the opening of the door during the unloading of the hopper.

[0007] Further advantages will become apparent from the following detailed description of a preferred but not exclusive embodiment of an improved unloading device for the hopper of a mechanical sweeper for large surfaces, according to the invention, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a schematic side view of an improved unloading device for the hopper of a mechanical sweeper for large surfaces;

figure 2 is an enlarged-scale side view of a detail of said device;

figure 3 is a side view, in an even more enlarged scale, of a detail of the device.

[0008] With particular reference to the above figures, the reference numeral 1 generally designates an im-

proved unloading device for the hopper 2 of a mechanical sweeper for large surfaces according to the invention.

[0009] The hopper 2 is of a substantially known type and is constituted by a large box-like body having a substantially square structure and supported by two arms 3 and 4 that are articulated to translating and lifting elements 5 provided on the rear 6 of an industrial mechanical sweeper; the reference numeral 7 designates the outline of a rear wheel of the mechanical sweeper, and the reference numeral 8 designates a rotating broom which, in a known manner, pushes the collected dirt into the hopper 2 through a front door 9 hinged to the hopper at 10.

[0010] A substantially square outlet 11 is provided in the lower rear region of the hopper and has a door 12 hinged to the hopper in a downward region 13.

[0011] The door 12 has manually-operated closing means 14 conveniently constituted by a bush 15 that is rotatably mounted proximate to the opening of the hopper and has, inside the hopper, a radial tab 16 rigidly coupled thereto and adapted to engage a shaped plate 17 fixed inside the door 12; on the outside of the hopper, the bush 15 is associatable with a safety lock 18 with a key 18a, as shown in the figure, or with a handle or the like.

[0012] The door 12 is peripherally provided with a sealing gasket 19 made of a deformable material that can be tubular and formed monolithically with a profile 20 that can be snugly fitted all around the door; the gasket 19 is adapted to be clamped between the edge of the door 12 and the base of the outlet 11.

[0013] The outlet 11 has, towards the outside, a perimetric lip 21 having a U-shaped cross-section and provided with coupling means 22 for the mouth of a throw-away waste containment bag 23.

[0014] The coupling means 22 are constituted by a flexible ring made of a material such as rubber that can be engaged in the groove 26 formed by the lip 21 on the mouth of the bag 23 previously arranged on the outlet 11.

[0015] An elastic clamp 24 is provided in the upper region of the rear wall of the hopper, above the outlet 11, and is adapted to retain the closed end of the bag; during the unloading of the hopper, said clamp is actuated so as to release the bag shortly before opening the door 12; advantageously, the clamp 24 is large and has a horizontally elongated clamping cross-member 25.

[0016] During the filling step, the hopper is supported by the arms 3 and 4 in a low position, shown in solid lines in figure 1, and the closed end of the bag is retained by the clamp 24; during the unloading of the hopper, the end of the bag is released by the clamp, the hopper is raised and slightly tilted forwards (to move the door 12 into a position that is closer to the horizontal, as shown in dashed lines in the figures), and the door 12 is opened with the key 18a; the collected dirt can thus fall freely into the bag 23 without raising dust and without scatter-

ing into the environment.

[0017] Once the hopper has been emptied into the bag, the ring 22 is removed, the bag is closed by tying its mouth, and after closing the door 12 again, a new bag 23 is fitted, securing it with the ring 22 and retaining its bottom with the clamp 24.

[0018] It is thus evident that the invention achieves the intended aim and object.

[0019] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept as defined by the appended claims.

[0020] All the details may furthermore be replaced with other technically equivalent ones.

[0021] In practice, the materials employed, as well as the shapes and the dimensions, may be any according to the requirements without thereby abandoning the protective scope of the appended claims.

[0022] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. Unloading device for the hopper of a mechanical sweeper for large surfaces, characterized in that said hopper (2) has an outlet (11) provided with a hinged door (12) having manually-operated closure means (14), and in that said outlet has, towards the outside, a perimetric lip (21) provided with retention means (26) for the mouth of a throwaway waste containment bag (23); an elastic clamp (24) being provided above said outlet and being adapted to retain the closed end of the bag (23), which is released simultaneously with the opening of the door (12) during the unloading of the hopper.
2. Device according to claim 1, characterized in that said retention means for the mouth of the bag are constituted by a peripheral external groove (26) of said lip (21) wherein a flexible ring (22), made of a material such as rubber, can be secured, said ring being adapted to clamp the mouth of the bag in the groove (26).
3. Device according to claim 1, characterized in that said door (12) is peripherally provided with a sealing gasket (19) adapted to be clamped against the base of said outlet (11).
4. Device according to claim 1, characterized in that said manually-operated closing means are constituted by a bush (15) that is rotatably mounted prox-

imate to the opening of the hopper and has, inside the hopper (2), a radial tab (16) adapted to engage a shaped plate (17) fixed inside said door (12), said bush (15) being associated with a safety lock (18), a handle (18a), or the like, on the outside of the hopper.

5. Device according to claim 1, characterized in that said outlet (11) is located in the lower rear region of the hopper and said clamp (24) is located in the upper region of the rear wall of the hopper.

Patentansprüche

1. Entladevorrichtung für einen Behälter eines mechanischen Kehrfahrzeuges für große Flächen, dadurch gekennzeichnet, daß der Behälter (2) einen Auslaß (11) besitzt, der mit einer angelenkten Türe (12) versehen ist, die eine von Hand betätigte Schließeinrichtung (14) besitzt und daß der Auslaß nach außen hin eine umlaufende Lippe (21) besitzt, die mit einer Halteeinrichtung (26) für die Mündung eines Einwege-Abfallaufnahmebeutels (23) versehen ist; wobei eine Klemmeinrichtung (24) oberhalb des Auslasses vorgesehen ist, die zum Halten des geschlossenen endes des Beutels (23) ausgebildet ist, die gleichzeitig mit dem Öffnen der Türe (12) während des Entladevorganges des Behälters gelöst wird.
2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die Halteeinrichtung für die Mündung des Beutels von einer äußeren Umfangsnut (26) der Lippe (21) gebildet ist, wobei ein flexibler Ring (22) aus einem Werkstoff wie insbesondere Gummi festlegbar ist und wobei der Ring zum Klemmen der Mündung des Beutels in der Nut (26) ausgebildet ist.
3. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die Türe (12) am Umfang mit einer Dichtung (19) versehen ist, die zur Festlegung an der Basis der Öffnung (11) ausgebildet ist.
4. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die von Hand betätigte Schließeinrichtung von einer Buchse (15) gebildet ist, die benachbart zur Öffnung des Behälters drehbar angeordnet ist und innerhalb des Behälters (2) einen radialen Fortsatz aufweist, der zum Eingriff mit einer geformten Platte (17) ausgebildet ist, die innerhalb der Türe (12) festgelegt ist, wobei die Buchse (15) einem Sicherheitsverschluß (18), einem Handgriff (18a) oder dergleichen an der Außenseite des Behälters zugeordnet ist.
5. Vorrichtung nach Anspruch 1, dadurch gekenn-

zeichnet, daß der Auslaß (11) im unteren hinteren Bereich des Behälters angeordnet ist und die Klemmeinrichtung (24) im oberen Bereich der Rückwand des Behälters angeordnet ist.

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Revendications

1. Dispositif de décharge de la trémie d'une balayeuse mécanique pour grandes surfaces, caractérisé en ce que ladite trémie (2) a une sortie (11) munie d'une porte pivotante (12) comportant des moyens de fermeture à commande manuelle (14), et en ce que ladite sortie présente, vers l'extérieur, une lèvre périmétrique (21) pourvue d'un moyen de retenue (26) de l'embouchure d'un sac de réception des débris déchargés (23) ; une pince élastique (24) étant prévue au-dessus de ladite sortie et pouvant retenir l'extrémité fermée du sac (23), qui est libérée simultanément à l'ouverture de la porte (12) pendant la décharge de la trémie. 10 15 20
2. Dispositif selon la revendication 1, caractérisé en ce que ledit moyen de retenue de l'embouchure du sac est constitué par une gorge périphérique extérieure (26) de ladite lèvre (21) dans laquelle on peut fixer un anneau flexible (22) fabriqué en une matière telle que du caoutchouc, ledit anneau étant prévu pour pincer l'embouchure du sac dans la gorge (26). 25 30
3. Dispositif selon la revendication 1, caractérisé en ce que ladite porte (12) est pourvue périphériquement d'un joint d'étanchéité (19) prévu pour être serré contre la base de ladite sortie (11). 35
4. Dispositif selon la revendication 1, caractérisé en ce que lesdits moyens de fermeture à commande manuelle sont constitués par un manchon (15) qui est monté de façon tournante près de l'ouverture de la trémie et qui comporte, à l'intérieur de la trémie (2), un bras radial (16) qui peut venir en prise avec une plaque profilée (17) fixée à l'intérieur de ladite porte (12), ledit manchon (15) étant associé à une serrure de sécurité (18), une poignée (18a) ou un moyen analogue du côté extérieur de la trémie. 40 45
5. Dispositif selon la revendication 1, caractérisé en ce que ladite sortie (11) est située dans la région inférieure arrière de la trémie et ladite pince (24) est située dans la région supérieure de la paroi arrière de la trémie. 50

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