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(54) **SOFT CONTAINER FOR TRANSPORTING LIGHT LOOSE LOADS**

(57) A flexible container for transporting light bulk goods comprises a receptacle in the shape of a rectangular parallelepiped with a volume exceeding 13 m³. Said receptacle has a charging neck on an upper base, a discharge valve (3) on the bottom, and four soft perforated partitions (4) arranged inside the receptacle. The container further comprises a sling structure (5), the slings of which are connected to one another on the

bottom (6) of the receptacle, and lifting loops (7) of the sling structure have a detachable connection (8) to the receptacle, proximate the upper base thereof, as well as being connected to one another by an additional load-distributing sling strap (9) which, in turn, has a connection (10) to the receptacle, proximate the upper base thereof. The sling structure also includes sling straps (11) arranged along the outer perimeter of the receptacle.

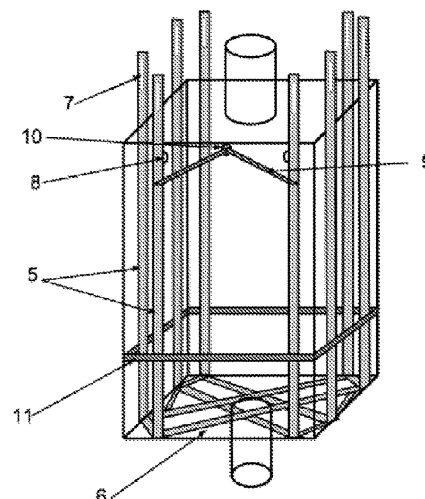


Fig. 2

Description

[0001] This utility model belongs to the transportation industry and can be used to produce a heavy-duty bag for shipping bulk goods with low volumetric density, such as bulk construction materials, raw materials for the metallurgical industry, chemical products, raw sugar, grain, coffee, and other food cargos.

[0002] Hence, there is a flexible container for transporting and storing bulk goods (Ukrainian patent for invention No. 72054, published on 07/15/2003), which includes a receptacle with an upper loading aperture, a lower unloading aperture, and a power frame. This invention also comprises a locking device, a power grid with lifting loops and a bottom. According to this well-known invention, a receptacle is arranged in a power grid and coupled to it in the upper section by a detachable joint, which consists of sequentially interconnected loops fixed on the receptacle and the power grid having the last group of loops shorted by a cord tie. Moreover, the continuation of the loops fixed on the receptacle is made as ribbons, placed obliquely to the threads of the base of the receptacle. The power grid has a bottom with an opening and a rim element connected to the unloading aperture of the receptacle, and the receptacle is equipped with sleeves having tape loops and a system of valves. One of the sleeves is fixed on the loading aperture of the receptacle.

[0003] In terms of technical nature, purpose, and achieved result, the most similar to the claimed utility model is the Flexible Container "MK 14" (<http://nttrans.net/ru/mk-14-10>), which includes a receptacle with an upper loading aperture, a lower unloading aperture, and a power frame. This device also comprises a locking device, a power grid with lifting loops and a bottom.

[0004] This well-known device shows such a drawback as a small volume (13 m^3), which makes it impossible to fill the whole useful space of the open wagon with bulk cargo with a low volumetric density of 0.78 t/m^3 and less due to its cylindrical shape. This causes the loss of the useful space of the open wagon.

[0005] Thus, one cylindrical bag can hold up to 10 tons of light weight.

[0006] More specifically, one 13 m^3 sack can hold 10.14 tons of grain (with a volumetric density of 0.78 t/m^3).

[0007] The open wagon can hold 5 such bags. This means that a wagon, which can transport up to 67 tons, carries only 50.7 tons.

[0008] In terms of logistics, this is economically unprofitable.

[0009] This utility model was primarily aimed at increasing the volume of the receptacle and, as a consequence, increasing the payload volume of the wagon.

[0010] The set task is solved by providing the FLEXIBLE CONTAINER FOR TRANSPORTING LIGHT BULK GOODS with a receptacle with an upper loading aperture, a lower unloading aperture, and a power frame. According to the utility model, a receptacle is shaped as a

rectangular parallelepiped with a volume exceeding 13 m^3 . It has a loading aperture on the upper base and an unloading valve on the bottom. It comprises four soft perforated partitions located inside this container, equipped with a sling assembly that connects to each other at the bottom of the bag. The load loops of the sling assembly have a detachable coupling with the flexible container at its upper base, as well as an additional load distribution sling, which in turn has a coupling with the container at its upper base, and sling straps located on the outer perimeter of the container.

[0011] This utility model addresses the problem of increasing the volume of the container and, consequently, the payload volume of the wagon by creating a bag of up to 17 m^3 , which has the shape of a rectangular parallelepiped that will fill the entire payload volume of the open wagon. Thus, it becomes economically advantageous to transport light bulk goods in the open wagon. When this target is achieved, 66.3 tons of grain will be transported in the open wagon ($17 \text{ m}^3 \times 0.78 \text{ t/m}^3 = 66.3 \text{ tons}$), which is basically 16 tons more than the known cylindrical sacks in the open wagon.

[0012] This is further enhanced by the fact that the proposed container has the shape of a rectangular parallelepiped and a volume greater than 13 m^3 and is equipped with four perforated partitions.

[0013] The utility model can be illustrated by the following drawings:, wherein

Fig. 1 shows a general view and
Fig. 2 shows a sling assembly separately.

[0014] This multipurpose container has such basic components (see Fig. 1 and Fig. 2): Flexible container (1) is shaped as a rectangular parallelepiped with a volume exceeding 13 m^3 . It has a loading aperture (2) on the upper base and an unloading valve (3) on the bottom. It comprises four soft perforated partitions (4) located inside this container, equipped with a sling assembly (5) that connects to each other at the bottom of the bag (6). The load loops (7) of the sling assembly have a detachable coupling (8) with the flexible container at its upper base, as well as an additional load distribution sling (9), which in turn has a coupling (10) with the container at its upper base, and the sling straps (11) located on the outer perimeter of the container.

[0015] This device is operated as follows. Flexible container for transporting and storing bulk goods is used according to the well-known pattern: loading, transportation to the consumer, and unloading. Before loading the bulk check cargo whether the unloading valve (3) is closed. Then the container is lifted, suspended by the main slings (11), and connected to the hopper feeding bulk cargo. Then, the lower unloading valve (3) is released, through which the container's bulk cargo is discharged.

[0016] Hence, the utility model attains the objective of increasing the volume of the receptacle and, as a con-

sequence, increasing the payload volume of the wagon.

Claims

1. FLEXIBLE CONTAINER FOR TRANSPORTING LIGHT BULK GOODS with a receptacle with an upper loading aperture, a lower unloading aperture, and a power frame, **characterizing in that** the container is shaped as a rectangular parallelepiped with a volume exceeding 13 m^3 , it has a loading aperture on its upper base and an unloading valve on its bottom, it comprises four soft perforated partitions located inside this container, equipped with a sling assembly that connects to each other at the bottom of the bag, and load loops of the sling assembly have a detachable coupling with the flexible container at its upper base, as well as an additional load distribution sling strap, which in turn has a coupling with the container at its upper base, and sling straps located on the outer perimeter of the container.

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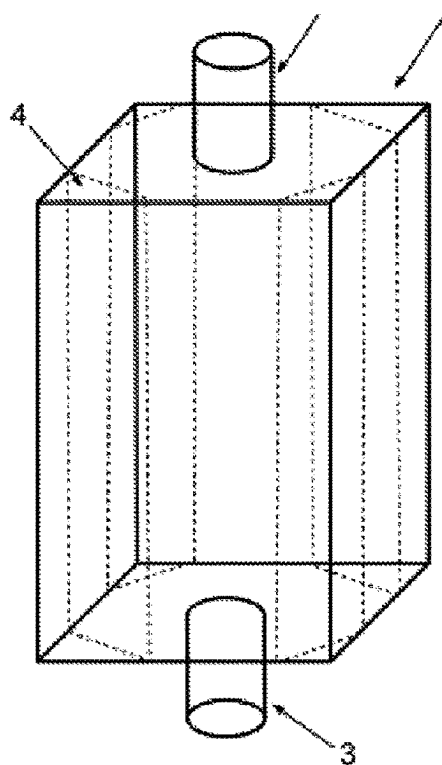


Fig. 1

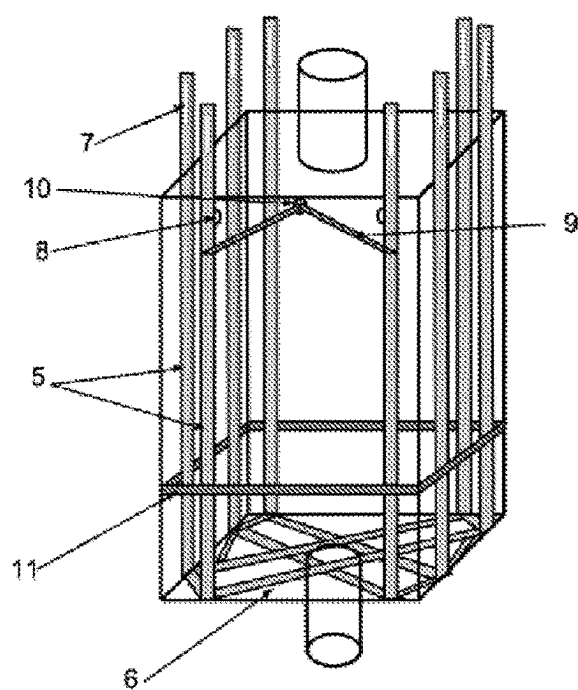


Fig. 2

INTERNATIONAL SEARCH REPORT

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PCT/IB2022/055411

A. CLASSIFICATION OF SUBJECT MATTER
B65D 88/22; B65D 90/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B65D 88/22; B65D 90/20

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Espacenet, JAP, USPTO, DWPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2018265281 A1 (PARK CHAN KYUNG [KR]) 20 September 2018 (20.09.2018) (para. [0002], [0054]-[0081], [0088]; figs. 1-8)	1
Y	US 5076710 A (SUPER SACK MANUFACTURING CORPORATION [US]) 31 December 1991 (31.12.1991) (abstract; column 6, line 39 column 7, line 16; figs. 11-13)	1
Y	EP 0664258 A1 (MULOX IBC LIMITED [GB]) 26 July 1995 (26.07.1995) (column 1, lines 47-52, column 4, line 54 - column 5, line 4; figs. 6, 7)	1
Y	WO 2017171691 A2 (RABIZO IVAN GEORGIEVICH [UA]) 05 October 2017 (05.10.2017) (page 5, lines 1-32; figs. 1, 2)	1
Y	UA 72054 C2 (AKHUNDOV EMIL AKHMEDOVICH [RU] et al.) 17 January 2005 (17.01.2005) (page 2, 6th paragraph from the top; figs. 1, 2)	1

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"&" document member of the same patent family

Date of the actual completion of the international search
14 June 2023 (14.06.2023)Date of mailing of the international search report
28 June 2023 (28.06.2023)Name and mailing address of the ISA/
UA

Authorized officer

Facsimile No.

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INTERNATIONAL SEARCH REPORT

International application No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 2966009 A1 (INDUTAINER GMBH [DE]) 13 January 2016 (13.01.2016) (abstract; para. [0003]-[0006]; fig. 2)	1
A	RU 2132296 C1 (AKHUNDOV EHMIL AKHMEDOVICH [RU] et al.) 27 June 1999 (27.06.1999) (abstract; fig. 1)	1
A	KR 102137966 B1 (KORIMA IND CO LTD [KR] et al.) 27 July 2020 (27.07.2020) (abstract; figs.1, 3b)	1

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/IB2022/055411

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RU 2132296 C1	27.06.1999	None	
KR 102137966 B1	27.07.2020	None	