



Acknowledgement of receipt

We hereby acknowledge receipt of your request for grant of a European patent as follows:

Submission number	300250482	
Application number	EP17382681.9	
File No. to be used for priority declarations	EP17382681	
Date of receipt	11 October 2017	
Your reference	P172535EP	
Applicant	Egavic serveis d'enginyeria, S.L.	
Country	ES	
Title	PROCESS FOR TRANSPORTING AND ASSEMBLING A SILO, SILO ASSEMBLY AND ASSEMBLY OF SILOS	
Documents submitted	package-data.xml application-body.xml OLF-ARCHIVE.zip\P172535EP-.zip SPECEPO-2.pdfP172535EP-drawings_1.pdf (7 p.) f1002-1.pdf (1 p.)	ep-request.xml ep-request.pdf (5 p.) SPECEPO-1.pdfP172535EP-spec-draft-V6.pdf (14 p.) OTHER-1.pdfStatement 706 IB ES.pdf (1 p.)
Submitted by	CN=Manuel Barrero 34075	
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Request for grant of a European patent

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1 Application number:	<input type="text" value="MKEY"/>
2 Date of receipt (Rule 35(2) EPC):	<input type="text" value="DREC"/>
3 Date of receipt at EPO (Rule 35(4) EPC):	<input type="text" value="RENA"/>
4 Date of filing:	

5 Grant of European patent, and examination of the application under Article 94, are hereby requested.

5.1 The applicant waives his right to be asked whether he wishes to proceed further with the application (Rule 70(2))

Procedural language:

Description and/or claims filed in:

6 Applicant's or representative's reference

Filing Office:

Applicant 1

7-1 Name:

8-1 Address:

10-1 State of residence or of principal place of business:

14.1 The/Each applicant hereby declares that he is an entity or a natural person under Rule 6(4) EPC.

Representative 1

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Inventor(s)

23 Inventor details filed separately

24 **Title of invention**

Title of invention:

PROCESS FOR TRANSPORTING AND ASSEMBLING A SILO, SILO ASSEMBLY AND ASSEMBLY OF SILOS

25 **Declaration of priority (Rule 52)**

A declaration of priority is hereby made for the following applications

25.2 This application is a complete translation of the previous application

25.3 It is not intended to file a (further) declaration of priority

26 **Reference to a previously filed application**

27 **Divisional application**

28 **Article 61(1)(b) application**

29 **Claims**

Number of claims:

15

29.1

as attached

29.2

as in the previously filed application (see Section 26.2)

29.3

The claims will be filed later

30 **Figures**

It is proposed that the abstract be published together with figure No.

31 **Designation of contracting states**

All the contracting states party to the EPC at the time of filing of the European patent application are deemed to be designated (see Article 79(1)).

32 **Different applicants for different contracting states**

33 Extension/Validation

This application is deemed to be a request to extend the effects of the European patent application and the European patent granted in respect of it to all non-contracting states to the EPC with which extension or validation agreements are in force on the date on which the application is filed. However, the request is deemed withdrawn if the extension fee or the validation fee, whichever is applicable, is not paid within the prescribed time limit.

33.1 It is intended to pay the extension fee(s) for the following state(s):

33.2 It is intended to pay the validation fee(s) for the following state(s):

34 Biological material

38 Nucleotide and amino acid sequences

The European patent application contains a sequence listing as part of the description

The sequence listing is attached in computer-readable format in accordance with WIPO Standard ST.25

The sequence listing is attached in PDF format

Further indications

39 Additional copies of the documents cited in the European search report are requested

Number of additional sets of copies:

40 Refund of the search fee under to Article 9 of the Rules relating to Fees is requested

Application or publication number of earlier search report:

42 Payment

Mode of payment

The European Patent Office is hereby authorised, to debit from the deposit account with the EPO any fees and costs indicated on the fees section below.

Currency:

Deposit account number:

Account holder:

43 Refunds

Any refunds should be made to EPO deposit account:

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Fees	Factor applied	Fee schedule	Amount to be paid
001 Filing fee - EP direct - online	1	120.00	120.00
002 Fee for a European search - Applications filed on/after 01.07.2005	1	1 300.00	1 300.00
015 Claims fee - For the 16th to the 50th claim	0	235.00	0.00
015e Claims fee - For the 51st and each subsequent claim	0	585.00	0.00
501 Additional filing fee for the 36th and each subsequent page	0	15.00	0.00
Total:		EUR	1 420.00

44-A Forms

Details:

System file name:

A-1	Request		as ep-request.pdf
A-2	1. Designation of inventor	1. Inventor	as f1002-1.pdf

44-B Technical documents

Original file name:

System file name:

B-1	Specification	P172535EP-spec-draft-V6.pdf Description; 15 claims; abstract	SPECEPO-1.pdf
B-2	Specification	P172535EP-drawings_1.pdf 13 figure(s)	SPECEPO-2.pdf
B-3	Pre-conversion archive	P172535EP-.zip	OLF-ARCHIVE.zip

44-C Other documents

Original file name:

System file name:

C-1	Statement	Statement 706 IB ES.pdf	OTHER-1.pdf
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General authorisation:

46 Signature(s)

Place:

MADRID

Date:

11 October 2017

Signed by:

/M.STIEBE/

Association:

BALDER IP Law, S.L.

Representative name: **Lars Magnus STIEBE**

Capacity: **(Representative)**

Form 1002 - 1: Public inventor(s)

Designation of inventor

User reference: P172535EP
Application No:

Public

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Place: MADRID
Date: 11 October 2017
Signed by: /M.STIEBE/
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**PROCESS FOR TRANSPORTING AND ASSEMBLING A SILO, SILO ASSEMBLY AND
ASSEMBLY OF SILOS**

TECHNICAL FIELD

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The present invention relates to the field of silos for storage of materials. More particularly, the present invention relates to a silo and a process for transporting and assembling such silo that allows saving costs while improving the quality.

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STATE OF THE ART

Silos have been known for a long time since they have been quite necessary for the storage of material. In many cases, silos store granulated material, powdery material, among other. In spite of the somewhat simple construction or assembly of a silo, there have been
15 efforts in the prior art to further improve assembling and/or installing silos.

Patent document WO-2015134338-A1 discloses a temporary addition or injection system. In such system, a silo can be mounted on a trailer, a transfer pot and/or a control system may be mounted on the trailer, transport the silo to a work-site and self-erect it to stand vertically on the trailer at the work-site or dismount the silo at the work-site.

20

Patent document WO-9606753-A1 relates to a transport vehicle that enables receiving and depositing a container such as a silo. The transport vehicle includes a pivoting device with two arms in parallel that are pivoted when receiving and depositing the silo, thereby making possible to erect the silo at an installation site.

Patent document EP-1871697-B1 discloses containers for storing dry granules and
25 powders, such containers being silos in some examples. A cylindrical silo may be transported and lifted onto a concrete base to be installed at a particular location. The cylindrical silo may have mounted thereon a filter that fits within the space between the silo and the supporting structure.

30

In patent document US-2013142601-A1 there is disclosed a transportable self-erecting silo system for oil and natural gas. The patent document describes a trailer including a flipper mechanism coupled with a trailer bed and a rocker arm. The silo is mounted on the truck, and by means of the flipper mechanism and some hydraulic jacks the silo may be raised and rotated for the installation of the same.

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At some installation locations, the construction of silos is expensive due to a lack of facilities or machinery for carrying out such task. Accordingly, there is a need for minimizing the number of tasks that need be carried out at an installation location and reducing the complexity of such tasks. It is preferable that most of the tasks for the construction and/or

assembly of silos may be carried out at facilities of a company, even if the facilities are remote from the installation location.

The inventors have found out that silos may be further improved in what regards the transportation and assembly of the same in order to save time and costs when new silos need be installed at a particular location.

DESCRIPTION OF THE INVENTION

A first aspect of the invention relates to a process for transporting and assembling at least one silo for storage of granulated or powdery material, comprising:

- providing a body of silo;
- providing inside the body of silo:
 - a hopper or components for making the hopper; and
 - a supporting structure of the at least one silo;
- transporting, to an installation location of the at least one silo, the body of silo with the supporting structure and the hopper or components for making the hopper arranged inside the body of silo;
- assembling, at the installation location of the at least one silo, the hopper and the body of silo at a first end thereof; and
- providing, at the installation location of the at least one silo, the body of silo on the supporting structure.

The process for transporting and assembling at least one silo of the present disclosure makes possible to prepare one or more silos at one location where facilities and machines for the preparation of silos are available, and to transport the prepared one or more silos to a location where they are to be installed for the final assembling of the same. This is particularly advantageous for simplifying installation of new silos at those locations where manpower, machinery and/or facilities for building silos are scarce or expensive. Accordingly, the process of this aspect of the invention reduces the number of operations that need be carried out at the installation location in what regards building the silo. As the body of silo is already built, only the hopper and supporting structure need be assembled.

In order to ease the transporting and assembling the at least one silo, the body of silo is adapted to host some or all the components necessary for the installation of the at least one silo at the installation location. In this sense, the hopper or the components for making the same may be arranged inside the body of silo so that the transportation of the body of silo already provides the transportation of the other components. This saves time and simplifies the transportation since only the body of silo has to be attached to a means of transportation (e.g. a ship, a truck, a train, etc.) as the remaining components are already

stored inside the body of silo.

Upon arriving at the installation location, the components within the body of silo are taken out therefrom so that the hopper may be mechanically coupled with the body of silo. When the components for making the hopper are arranged inside the body of silo, then the hopper is first assembled, and then it is mechanically coupled with the body of silo. Similarly, the supporting structure is also assembled so that the body of silo may be provided on top of it and, thus, the hopper may provide the material at the lower part of the silo through the unload opening thereof.

In some preferred embodiments, the at least one silo is for storage of granulated or powdery edible material.

In some embodiments, a shape of the body of silo is a parallelepiped.

In contrast to a body of silo featuring a cylindrical shape or geometry, as the shape of the body of silo comprises six planar faces (e.g. cuboid, cube, etc.), the transportation of the body of silo is simple in what regards attaching the body of silo to a means of transportation. Additionally, the same shape is also advantageous for hosting components inside of the body of silo for the transportation.

In some embodiments, the body of silo is a freight container.

The body of silo may be provided in the form of a freight container, thereby reducing the cost of transporting and assembling the silo.

In some of these embodiments, the process further comprises removing, from the body of silo, at least one door from a first end or a second end of the body of silo; wherein a step of removing at least one door from the body of silo takes place after a step of transporting, to an installation location of the at least one silo, the body of silo.

One of the end walls need not be removed, and can serve as an upper cover. Only it is needed to modify for example with a feeding inlet. Obviously, these modifications will be carried on at the installation site.

When the body of silo is a freight container, it may be advantageous to maintain the whole structure of the freight container (that is, the six sides of the container) for securing the components stored inside the body of silo. Then, at the installation location of the at least one silo, at least one door may be removed from one end of the container so that the container may function as a silo.

In some of these embodiments, the process further comprises providing at least one plate on an inner face of each wall of the body of silo, each of the at least one plate preferably comprising food paint on a face thereof.

Since the walls of a freight container may comprise slots, protrusions and/or recesses, mainly due to the nerves or undulated shape of the wall (for providing rigidity to the walls), in order to store the material within the at least one silo it is convenient that the inner

face of the walls of the container are flat. By providing from the inside of the body of the silo at least one plate on each of these walls the surface is made planar. Preferably each of these plates are coated or painted with food paint.

5 Another reason for attaching plates to the inner surface of the undulated walls of the silo is to provide more stiffness. In some cases, the lower plates can be thicker than the upper ones, since the pressure is higher in the lower part due to the column pressure.

10 The plates, like in the prior art, are preferably provided with through apertures that coincide with the segments of the (undulated) wall that are more interior, such that it is possible to weld the plates to the nerves, which will be placed horizontal when the container is placed vertically.

In some of these embodiments, the freight container is a sea container.

In some embodiments, the process further comprises painting an inner face of each wall of the body of silo with food paint.

15 In some embodiments, a step of assembling the hopper and the body of silo at a first end thereof takes place after a step of providing, at the installation location of the at least one silo, the body of silo on the supporting structure.

In some embodiments, a step of providing, at the installation location of the at least one silo, the body of silo on the supporting structure comprises lifting the body of silo with a crane and placing with the crane the body of silo vertically on the supporting structure.

20 The use of cranes at some locations may be difficult depending on the geometry of the terrain, the presence of buildings blocking the free movement of the cranes, etc. and it also may be expensive (e.g. if there is a reduced number of cranes available). In some cases the use of a crane may be limited to lifting the body of silo so as to form the at least one silo, thereby simplifying the assembly of the at least one silo.

25 In some embodiments, the body of silo is a first body of silo, and the process further comprises:

providing second, third and fourth bodies of silo;

for each of the second, third and fourth bodies of silo:

30 providing inside the body of silo a hopper or components for making the hopper;

transporting, to the installation location of the at least one silo, the body of silo with the hopper or components for making the hopper arranged inside the body of silo;

35 assembling, at the installation location of the at least one silo, the hopper with the body of silo at a first end thereof; and

providing, at the installation location of the at least one silo, the body of silo on the supporting structure;

providing a combining hopper such that an opening thereof is coupled with an unload opening of each hopper assembled to the first, second, third and fourth bodies of silo.

In some cases a plurality of silos is to be transported and assembled so as to form an assembly of silos. Each of the silos to be assembled may host the components necessary for the building thereof.

By mechanically coupling a combining hopper with the unload opening of each hopper of the four silos, an assembly with a single unload opening (that of the combining hopper) may be provided. In the context of the present disclosure, the term 'master' of 'combining hopper' only denotes that it is a hopper used for collecting the material that is unloaded from each silo of the assembly of silos. It is clear that simply the term 'hopper' can be used instead of 'combining hopper' without departing from the scope of the present disclosure.

In some embodiments, dimensions of the body of silo are dimensions defined in standard ISO 1496, or any updating thereof.

A second aspect of the invention refers to a silo for storage of granulated or powdery material, comprising:

a body of silo, a shape of the body of silo being a parallelepiped; and

a hopper adapted to be included inside the body of silo and to be mechanically coupled with the body of silo at a first end of the body of silo.

Prior to the assembly of the silo, the silo is adapted to be transported and installed in a cost-effective manner. In this sense, the body of silo features a geometry of a parallelepiped that simplifies the transportation (it may be easily attached to a means of transportation) of the same and which makes possible to transport the components constituting the body of silo without increasing the volume that needs be transported (because the components are included within the body of silo).

In some embodiments, the silo further comprises a supporting structure adapted to be included inside the body of silo and to support the body of silo when the body of silo and the hopper are mechanically coupled.

The body of silo may also store inside the same the supporting structure that holds the silo in an upright position.

In some preferred embodiments, the silo is for storage of granulated or powdery edible material.

In some embodiments, the body of silo is a freight container.

The body of silo may be provided in the form of a freight container, thereby reducing the cost of transporting and assembling the silo.

In some of these embodiments, the freight container is a sea container.

In some embodiments, dimensions of the body of silo are dimensions defined in

standard ISO 1496 and all the updatings thereof.

Similar advantages as those described for the first aspect of the invention may also be applicable to the second aspect of the invention.

5 A third aspect of the invention relates to an assembly of silos for storage of granulated or powdery material, comprising:

four silos according to the second aspect of the invention;

a supporting structure for supporting of the four silos; and

a combining hopper;

each of the four silos is in contact with other two of the four silos; and

10 the combining hopper is provided such that an opening thereof is coupled with an unload opening of each hopper of the four silos.

In some preferred embodiments, each silo of the four silos is for storage of granulated or powdery edible material.

15 Similar advantages as those described for the second aspect of the invention may also be applicable to the third aspect of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

20 To complete the description and in order to provide for a better understanding of the invention, a set of drawings is provided. Said drawings form an integral part of the description and illustrate an embodiment of the invention, which should not be interpreted as restricting the scope of the invention, but just as examples of how the invention can be carried out. The drawings comprise the following figures:

25 Figures 1-4 show silos, which may be transported and assembled, in accordance with embodiments of the invention.

Figure 5 shows a mounted supporting structure of a silo.

Figure 6 shows a body of silo mounted on a supporting structure.

Figure 7 shows a body of silo in accordance with an embodiment of the invention.

Figures 8A-8B shows a process of lifting a body of silo.

30 Figure 9 shows a process for coupling a hopper with a body of silo.

Figure 10-12 partially show assemblies of silos in accordance with embodiments of the invention.

Figure 13 shows an assembly of silos in accordance with an embodiment of the invention.

35

DESCRIPTION OF WAYS OF CARRYING OUT THE INVENTION

As shown in the figures, the present invention relates to a process for transporting and assembling at least one silo 10a-10d, 25, 30 for storage of granulated or powdery material. Mainly, the great improvement of the present invention is that a container for transporting the silo will, at the installation site, be the silo body itself. This will allow for moving many assembly stages to the site where the container is built, thus allowing to save much costs at the installation site. Surprisingly, the inventors have checked that without or few modifications, the current containers can fulfill perfectly the silo body function.

To this end, the inventive method comprises the following steps:

10

First a step of providing a body of silo 11a-11d; This first step already allows itself to save costs and even improve the quality of the silo body, because instead of leaving the manufacturing stages of the silo body for the personnel available at the place of installation, these are made at the facilities of the container manufacturer. These manufacturers manufacture a large number of containers and can do so in an industrialized way and satisfying the quality standards. Indeed, as they are manufactured with the current techniques, i.e. assembling the parts that will form the silo in the place of installation, the final result is left to the chance of the manufacturing conditions at the installation place. This is all the more true given that these silos are often installed in developing countries, where skilled labor is scarce and construction tools are expensive and also maybe scarce. The modification of the container to be fully adapted for forming the body silo can be done at the container manufacturer facilities or at the silo manufacturer.

15
20

Second, a step of providing inside the body of silo 11a-11d:

25

a hopper 12a-12d or components for making the hopper 12a-12d; and
a supporting structure 13 of the at least one silo 10a-10d, 25, 30;

These steps, depicted through figures 1 to 3, are possible since there is room enough in the body to store the hopper and the supporting structure. And there is no need to store therein the plates that made the silo body, as it is currently done.

30

Next, the method goes on by transporting, to an installation location of the silo 10a-10d, 25, 30, the body of silo 11a-11d with the supporting structure 13 and the hopper 12a-12d or components for making the hopper 12a-12d arranged inside the body of silo 11a-11d; Since the silo body will be made of a container specially conceived for transportation, this step will be optimally carried out.

35

Finally, the method goes on by assembling, at the installation location of the silo 10a-10d, 25, 30, the hopper 12a-12d and the body of silo 11a-11d at a first end thereof; and mounting, at the installation location of the silo 10a-10d, 25, 30, the body of silo 11a-11d on the supporting structure 13.

5

As shown in the Figs, the shape of the body of silo 1 is a parallelepiped, and specifically, the body of silo 11a-11d is a freight container, preferably a maritime container, with standard dimensions. For example, the container may be a 20 feet, 40 feet or 40 feet high cube container, which length x width x height maybe approximatively respectively:

10

20 feet: 6 m x 2,4 m x 2,5 m

40 feet: 12,2 m x 2,4 m x 2,6 m

40 feet high cube: 12,2 m x 2,4 m x 2,9 m

15 The method can comprise the step of removing, from the body of silo 11a-11d, the doors from a first end or a second end of the body of silo; the step of removing the door from the body of silo 11a-11d takes place after a step of transporting, to an installation location of the silo 10a-10d, 25, 30, the body of silo 11a-11d. One of the door or end walls must be removed, since this end will form the open end of the silo body, such that the goods stored
20 therein can pass into the hopper.

Depending on the goods to be stored inside the silo, the process can further comprise providing plates on the inner face of each wall of the body of silo 11a-11d. These plates can preferably be coated with food paint on a face thereof. By food paint it is meant painting that
25 is compatible with the storage of foods. Again, this is a step that can be done at the silo manufacturer facility, in series.

Advantageously, the step of assembling the hopper 12a-12d and the body of silo 11a-11d at a first end thereof takes place after a step of providing, at the installation location of the silo
30 10a-10d, 25, 30, the body of silo 11a-11d on the supporting structure 13.

The step of providing, at the installation location of the silo 10a-10d, 25, 30, the body of silo 11a-11d on the supporting structure 13 comprises lifting the body of silo 11a-11d with a crane and placing with the crane the body of silo 11a-11d vertically on the supporting
35 structure 13, as shown in figures 8A to 9.

Now, another embodiment of the invention is disclosed, which comprises a plurality of silos,

that are joined to form a matrix or silos. Although the method is specifically disclosed and illustrated for four silos, it is also possible to apply it to only two or three silos, or for more than four silos.

As shown in figs 10 to 13, the body of silo 11a-11d is a first body of silo 11a-11d, and the process further comprises:

5 providing second, third and fourth bodies of silo 11a-11d;

for each of the second, third and fourth bodies of silo 11a-11d:

providing inside the body of silo 11a-11d a hopper 12a-12d or components for making the hopper 12a-12d;

10 transporting, to the installation location of the at least one silo 10a-10d, 25, 30, the body of silo 11a-11d with the hopper 12a-12d or components for making the hopper 12a-12d arranged inside the body of silo 11a-11d;

assembling, at the installation location of the at least one silo 10a-10d, 25, 30, the hopper 12a-12d with the body of silo 11a-11d at a first end thereof; and

15 providing, at the installation location of the at least one silo 10a-10d, 25, 30, the body of silo 11a-11d on the supporting structure 13;

providing a combining hopper 20 such that an opening thereof is coupled with an unload opening of each hopper 12a-12d assembled to the first, second, third and fourth bodies of silo 11a-11d.

20 This embodiment is especially advantageous in the context of the present invention. The core of the invention is using the container as a main part of the silo at the installation site. Therefore, the lateral dimensions of each silo will be limited by the width and the height of the container. Therefore, it is very likely that at the installation point many silos will have to be installed.

25 As shown in figures 1 to 3, the invention also relates to a silo assembly 10a-10d, 25, 30 for storage of granulated or powdery material, comprising a body of silo 11a-11d and a hopper 12a-12d or components for forming a hopper, and wherein the hopper 12a-12d or the components for forming a hopper are arranged inside the body of silo 11a-11d, such that the body of silo serves both as a container and as a main part of a silo.

30 Preferably, the silo assembly 10a-10d, 25, 30 further comprises a supporting structure 13 arranged inside the body of silo 11a-11d, said supporting structure being destined to support the body of silo 11a-11d when the body of silo 11a-11d and the hopper 12a-12d are mechanically coupled at an installation site.

The body of silo 11a-11d has preferably a parallelepiped shape, and is preferably a freight container and more preferably a sea container;

35 The invention also relates to an assembly 20 of silos 10a-10d, 25, 30 for storage of granulated or powdery material, comprising:

four silos 10a-10d, 25, 30 according to the silo described just above;
a supporting structure 13 for supporting of the four silos 10a-10d, 25, 30; and
a combining hopper 22;

5 wherein each of the four silos 10a-10d, 25, 30 is in contact with other two of the four
silos 10a-10d, 25, 30; and

wherein the combining hopper 22 is provided such that an opening thereof is coupled
with an unload opening of each hopper 12a-12d of the four silos 10a-10d, 25, 30.

Finally, both for the assembly and the silo, the dimensions of the body of silo are
dimensions defined in standard ISO 1496.

10 In the present description silo assembly and assembly of silos are different concepts.
The first means a kit for transporting a silo. The second one, assembly of silos means a
bigger structure resulting from adjoining two or more silos, that will share a common
discharge outlet.

15 In this text, the word “comprises” and its variants (such as “comprising”, etc.) should
not be understood in an exclusive sense, i.e. they do not exclude the possibility of that which
is described including other elements, steps, etc.

20 Also, the invention is not limited to the specific embodiments described herein, but
rather encompasses the variations that one skilled in the art could make (e.g. in terms of
choice of materials, dimensions, components, design, etc.), within the scope of what may be
deduced from the claims.

CLAIMS

1. Process for transporting and assembling at least one silo (10a-10d, 25, 30) for storage of granulated or powdery material, comprising:

5 providing a body of silo (11a-11d);

providing inside the body of silo (11a-11d):

a hopper (12a-12d) or components for making the hopper (12a-12d); and

a supporting structure (13) of the at least one silo (10a-10d, 25, 30);

10 transporting, to an installation location of the at least one silo (10a-10d, 25, 30), the body of silo (11a-11d) with the supporting structure (13) and the hopper (12a-12d) or components for making the hopper (12a-12d) arranged inside the body of silo (11a-11d);

assembling, at the installation location of the at least one silo (10a-10d, 25, 30), the hopper (12a-12d) and the body of silo (11a-11d) at a first end thereof; and

15 providing, at the installation location of the at least one silo (10a-10d, 25, 30), the body of silo (11a-11d) on the supporting structure (13).

2. Process according to claim 1, wherein a shape of the body of silo (1) is a parallelepiped.

20 3. Process according to any of the preceding claims, wherein the body of silo (11a-11d) is a freight container.

4. Process according to claim 3, further comprising removing, from the body of silo (11a-11d), at least one door from a first end or a second end of the body of silo; wherein a step of
25 removing at least one door from the body of silo (11a-11d) takes place after a step of transporting, to an installation location of the at least one silo (10a-10d, 25, 30), the body of silo (11a-11d).

5. Process according to any of claims 3-4, further comprising providing at least one plate on
30 an inner face of each wall of the body of silo (11a-11d), each of the at least one plate preferably comprising food paint on a face thereof.

6. Process according to any of claims 1-4, further comprising painting an inner face of each wall of the body of silo (11a-11d) with food paint.

35

7. Process according to any of the preceding claims, wherein a step of assembling the hopper (12a-12d) and the body of silo (11a-11d) at a first end thereof takes place after a step

of providing, at the installation location of the at least one silo (10a-10d, 25, 30), the body of silo (11a-11d) on the supporting structure (13).

5 **8.** Process according to any of the preceding claims, wherein a step of providing, at the installation location of the at least one silo (10a-10d, 25, 30), the body of silo (11a-11d) on the supporting structure (13) comprises lifting the body of silo (11a-11d) with a crane and placing with the crane the body of silo (11a-11d) vertically on the supporting structure (13).

10 **9.** Process according to any of the preceding claims, wherein the body of silo (11a-11d) is a first body of silo (11a-11d), and the process further comprises:

providing second, third and fourth bodies of silo (11a-11d);

for each of the second, third and fourth bodies of silo (11a-11d):

providing inside the body of silo (11a-11d) a hopper (12a-12d) or components for making the hopper (12a-12d);

15 transporting, to the installation location of the at least one silo (10a-10d, 25, 30), the body of silo (11a-11d) with the hopper (12a-12d) or components for making the hopper (12a-12d) arranged inside the body of silo (11a-11d);

assembling, at the installation location of the at least one silo (10a-10d, 25, 30), the hopper (12a-12d) with the body of silo (11a-11d) at a first end thereof; and

20 providing, at the installation location of the at least one silo (10a-10d, 25, 30), the body of silo (11a-11d) on the supporting structure (13);

providing a combining hopper (20) such that an opening thereof is coupled with an unload opening of each hopper (12a-12d) assembled to the first, second, third and fourth bodies of silo (11a-11d).

25

10. Silo assembly (10a-10d, 25, 30) for storage of granulated or powdery material, comprising a body of silo (11a-11d) and a hopper (12a-12d) or components for forming a hopper, **characterized in that** the hopper (12a-12d) or the components for forming a hopper are arranged inside the body of silo (11a-11d), such that the body of silo serves both as a
30 container and as a main part of a silo.

11. Silo assembly (10a-10d, 25, 30) according to claim 10, further comprising a supporting structure (13) arranged inside the body of silo (11a-11d), said supporting structure being destined to support the body of silo (11a-11d) when the body of silo (11a-11d) and the
35 hopper (12a-12d) are mechanically coupled at an installation site.

12. Silo assembly (10a-10d, 25, 30) according to any of claims 10-11, wherein the body of

silo (11a-11d) is a freight container.

13. Assembly (20) of silos (10a-10d, 25, 30) for storage of granulated or powdery material, comprising:

5 four silos (10a-10d, 25, 30) according to any of claims 10-12;

 a supporting structure (13) for supporting of the four silos (10a-10d, 25, 30); and
 a combining hopper (22);

 wherein each of the four silos (10a-10d, 25, 30) is in contact with other two of the four silos (10a-10d, 25, 30); and

10 wherein the combining hopper (22) is provided such that an opening thereof is coupled with an unload opening of each hopper (12a-12d) of the four silos (10a-10d, 25, 30).

14. Process according to any of claims 3-5 or silo according to claim 12, wherein the freight container is a sea container.

15

15. Process according to any of claims 1-9 or silo according to any of claims 10-12, wherein dimensions of the body of silo are dimensions defined in standard ISO 1496.

**PROCESS FOR TRANSPORTING AND ASSEMBLING A SILO, SILO ASSEMBLY AND
ASSEMBLY OF SILOS**

ABSTRACT

5

Process for transporting and assembling a silo (10a-10d, 25, 30) for storage of granulated or powdery material, comprising providing a body of silo (11a-11d); providing inside the body of silo (11a-11d) a hopper (12a-12d); and a supporting structure (13) of the silo (10a-10d, 25, 30); transporting, to an installation location of the silo (10a-10d, 25, 30), the body of silo (11a-11d) with the supporting structure (13) and the hopper (12a-12d) (12a-12d) arranged inside the body of silo (11a-11d); assembling, at the installation location of the silo (10a-10d, 25, 30), the hopper (12a-12d) and the body of silo (11a-11d) at a first end thereof; and providing, at the installation location of the silo (10a-10d, 25, 30), the body of silo (11a-11d) on the supporting structure (13). The invention also relates to a silo. Preferably the body of silo is a
10
15 freight container or a maritime container.

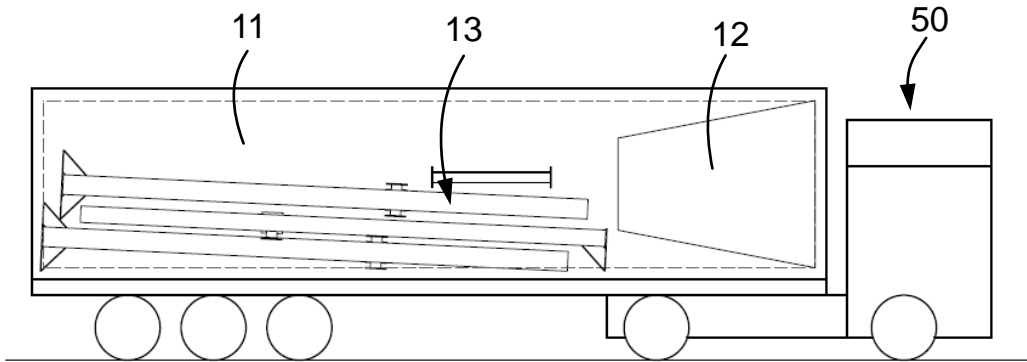


FIG. 1

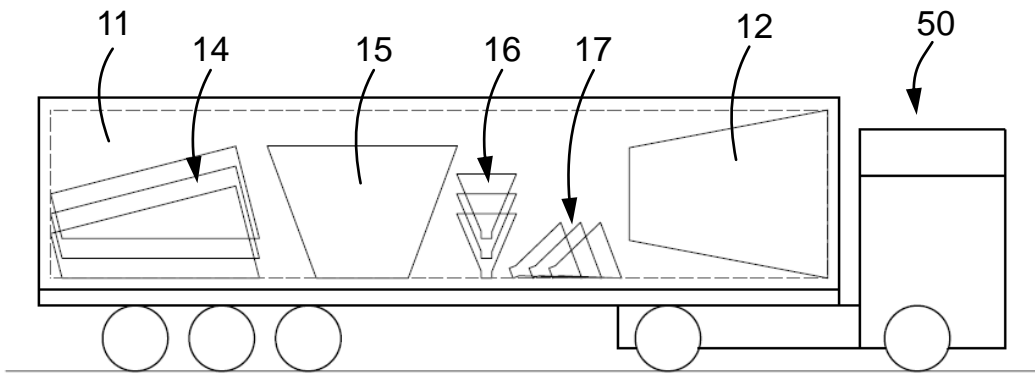


FIG. 2

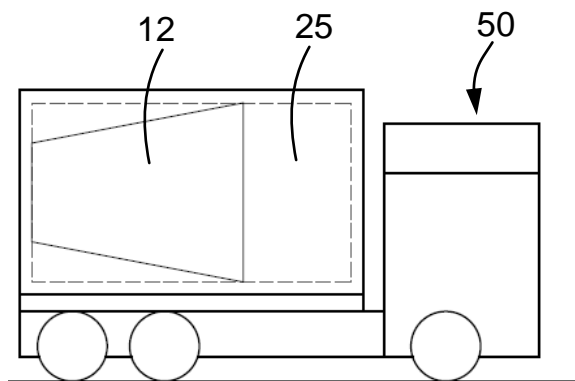


FIG. 3

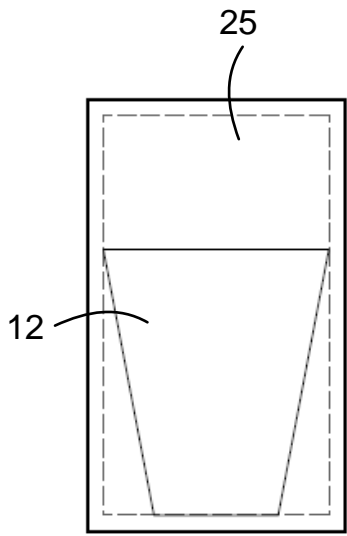


FIG. 4

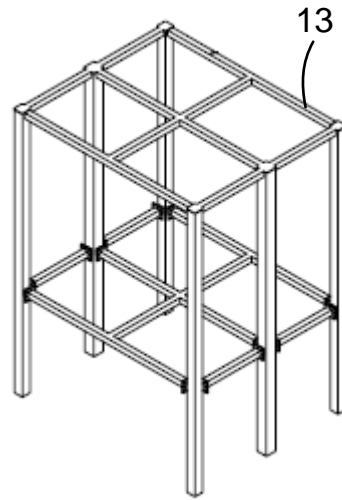


FIG. 5

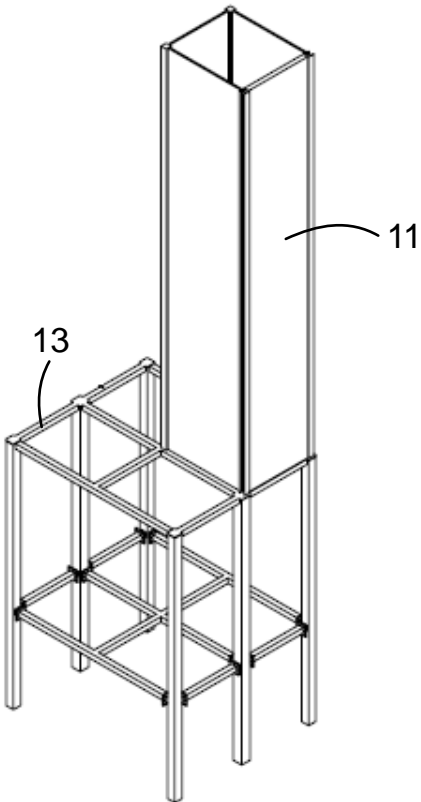


FIG. 6

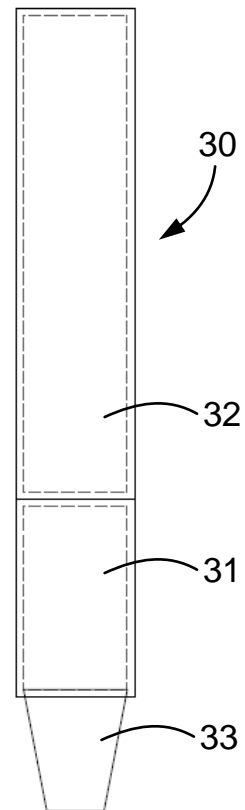


FIG. 7

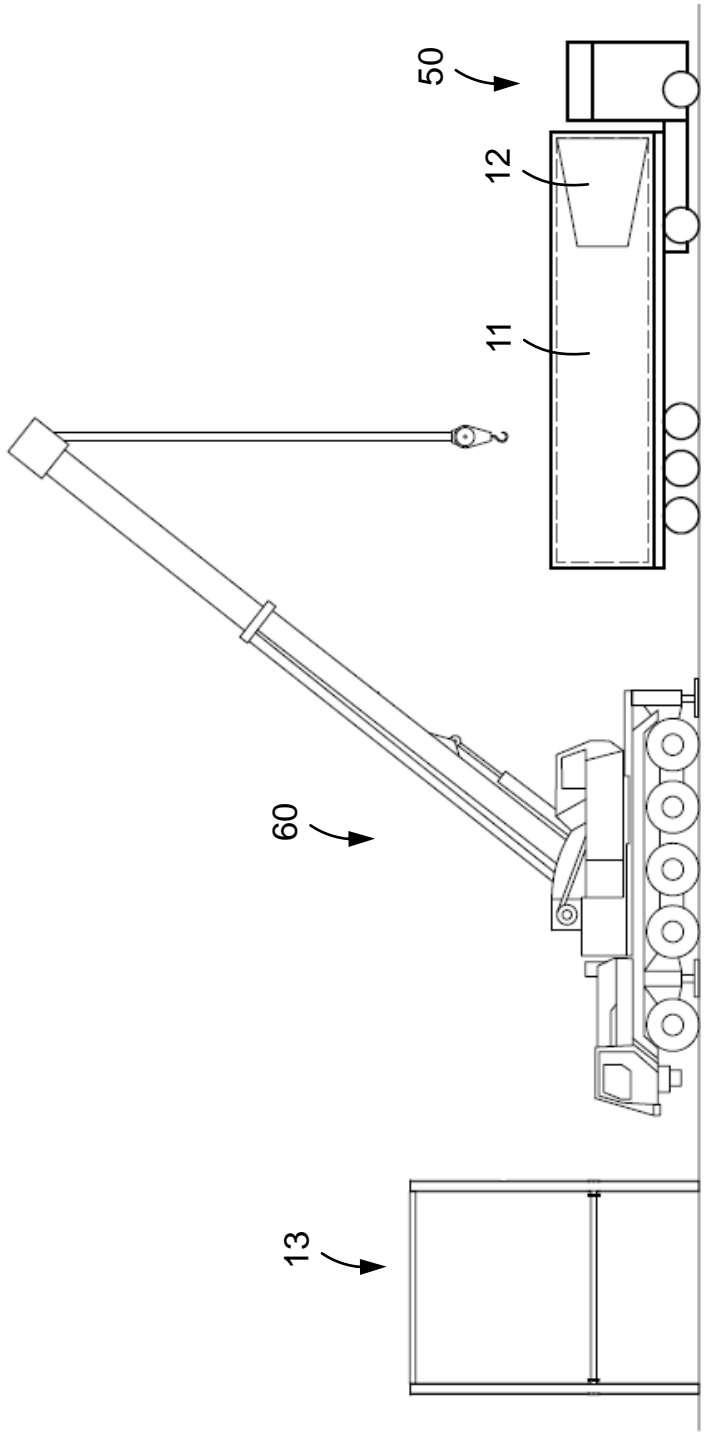


FIG. 8A

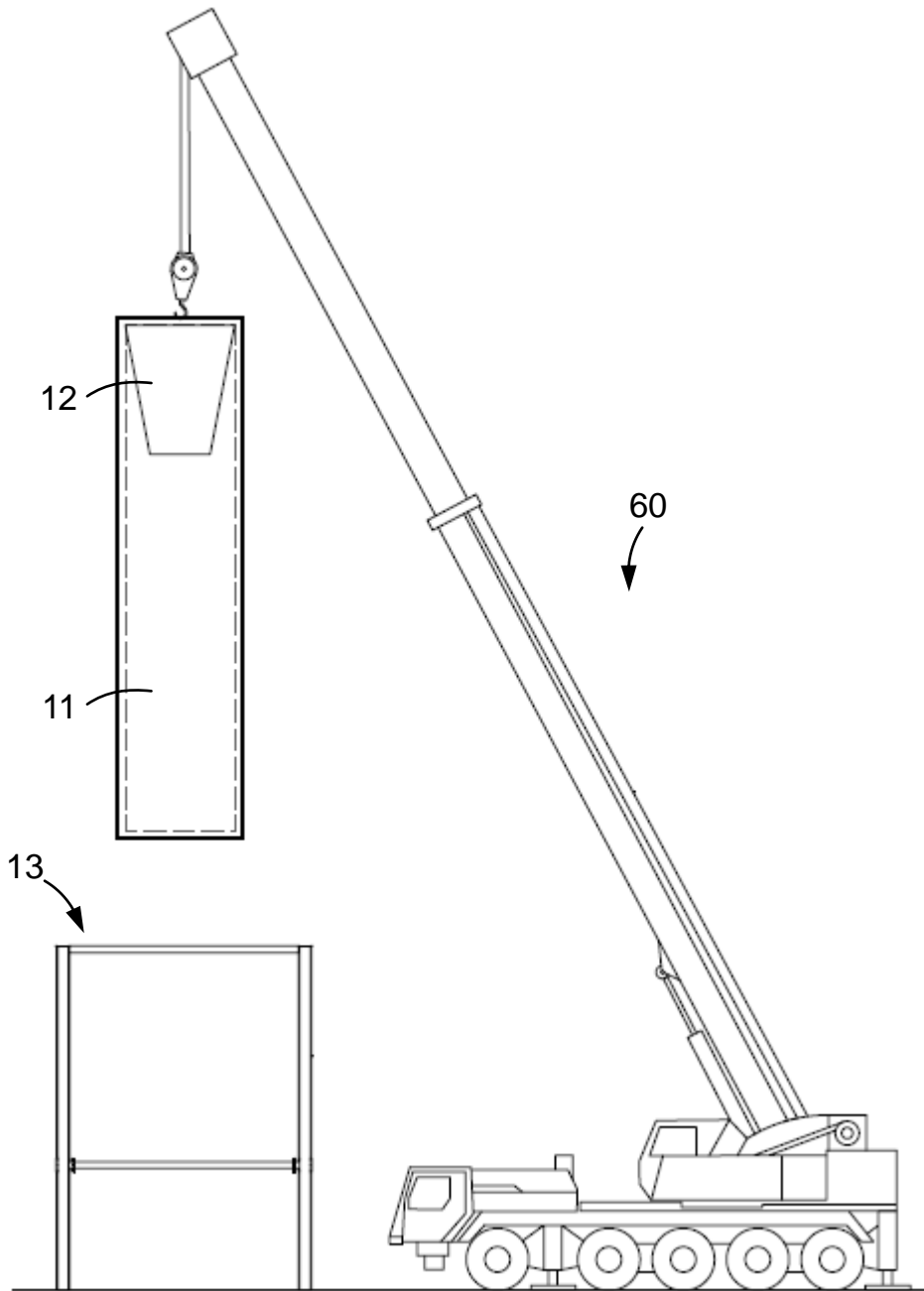


FIG. 8B

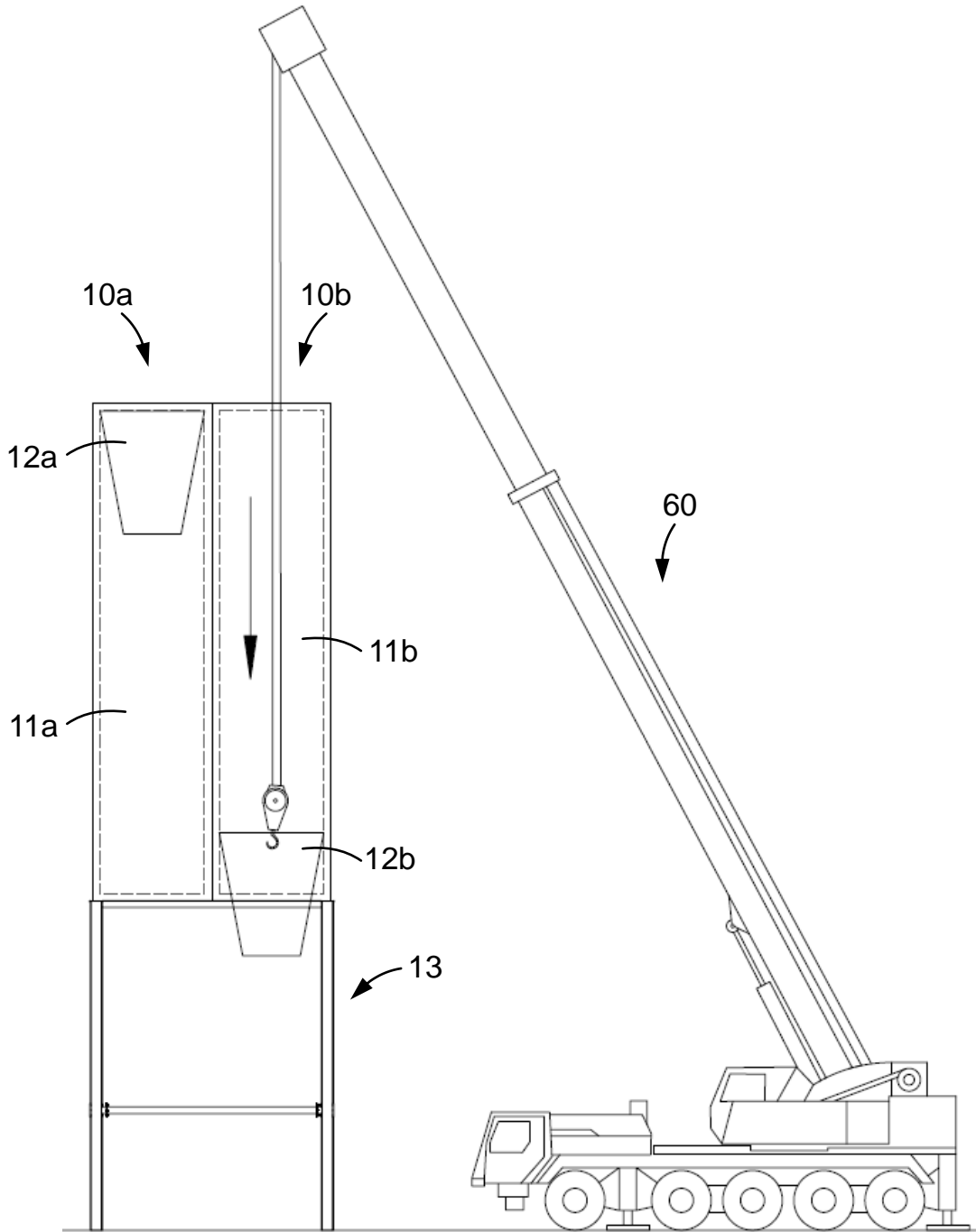


FIG. 9

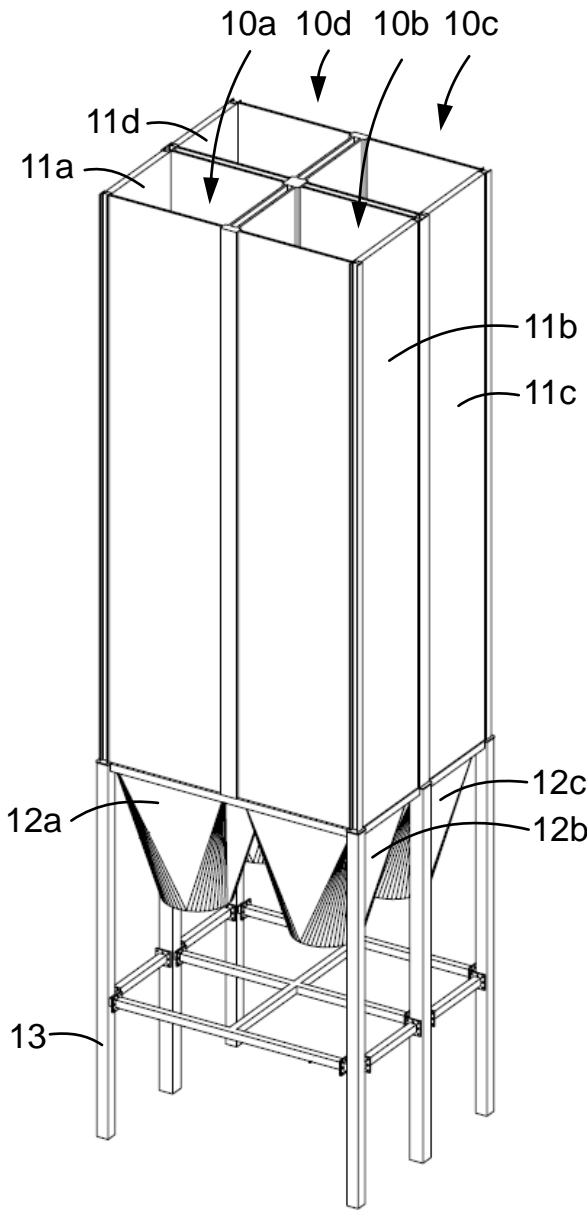


FIG. 10

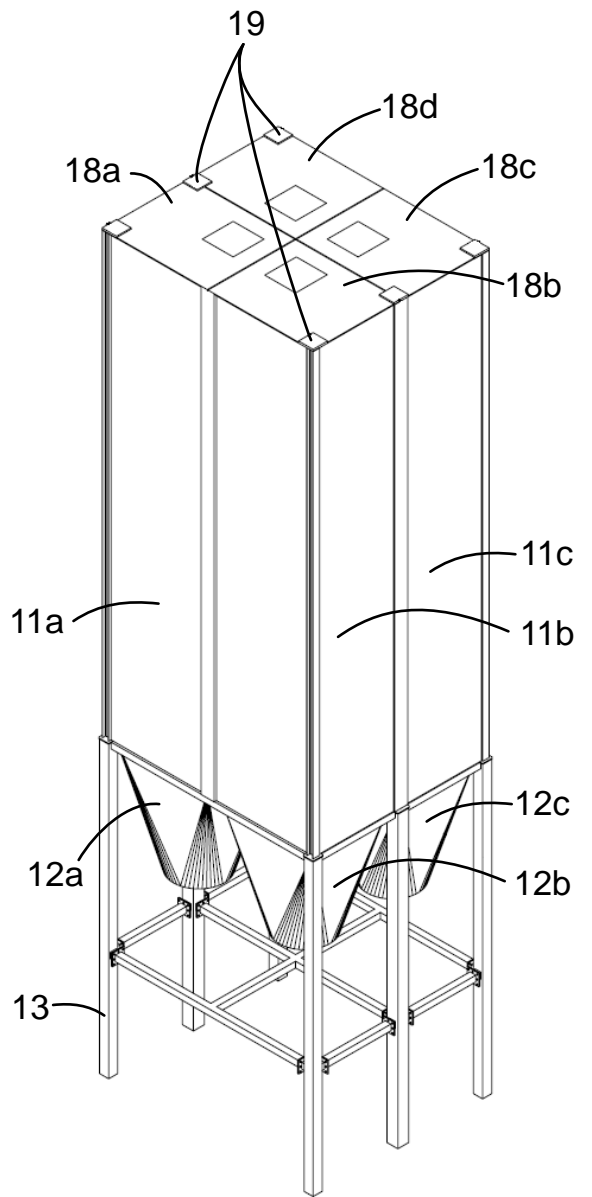


FIG. 11

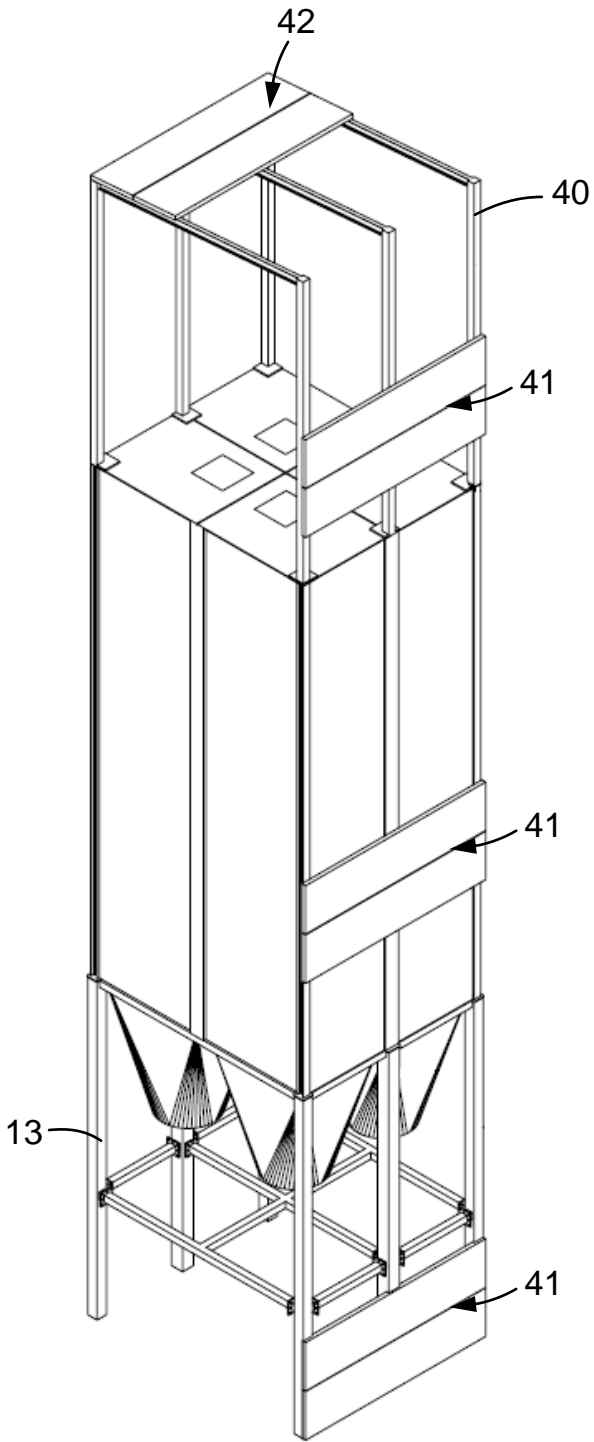


FIG. 12

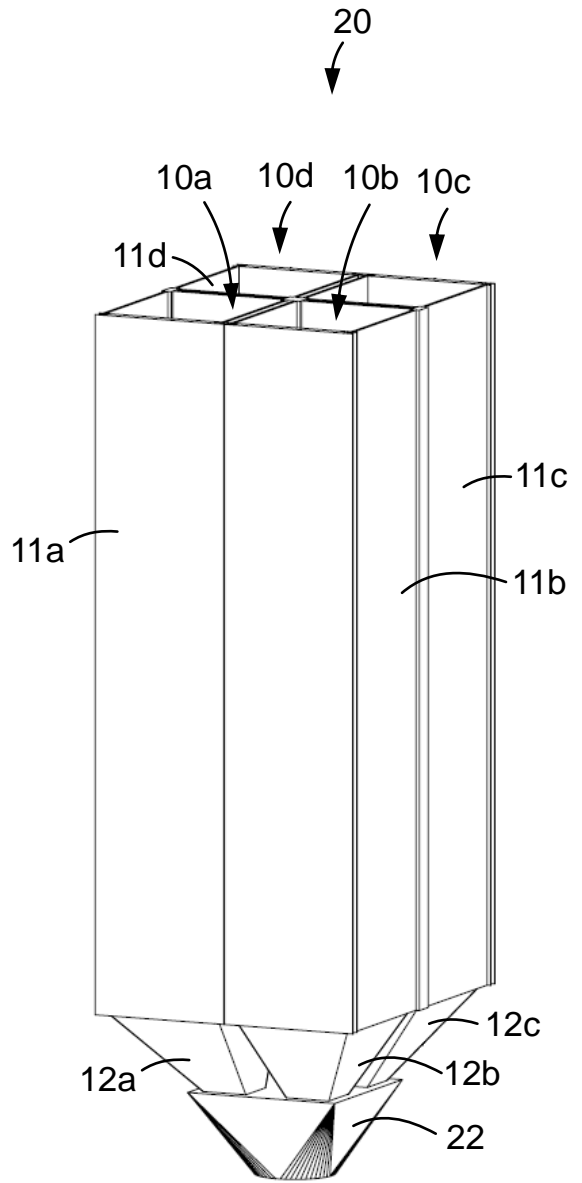


FIG. 13