

3) Family number: 30779757 (US2004154236A)

© PatBase

Title: MODULAR LOAD-BEARING STRUCTURAL COLUMN

Abstract: A practical method of manufacturing, assembling, and constructing a single silo or building or a cluster of polygonal storage silos using a column comprising horizontally-arrayed structural column panels. Column panels within a top horizontal array vertically aligning with column panels of a next lower horizontal array such that no discernible gap exists between top and bottom edges of column panels within the column. Seams, where top and bottom edges of column panels meet, preferably occur in different horizontal planes from each other throughout the column, thereby creating a stagger of column components in relationship to each other. Multiple layers of column components with the same, similar, or different configurations can be added to preferably cover seams of underlying column components to enhance structural integrity. A structure built with these columns can be constructed using a cost-effective and relatively safe method of jack-lifting. In addition, three or more of these structural columns can be connected together with wall panels or beams to fashion a polygonal compartment or multiple polygonal compartments, to serve as structural support for heavy loads, as a process tower for supporting equipment, a multi-story building for human occupancy (such as an apartment complex), or as bulk storage silo(s). The column can join standard and customized beams and wall panels. The column can extend above a structure to support a tower or another level, or it can extend below to serve as a support column for the entire structure. Columns can be attached to wall panels of round structures, to serve as stiffeners, or to the sides of polygonal structures, to serve as side-wall supports.

Classifications:

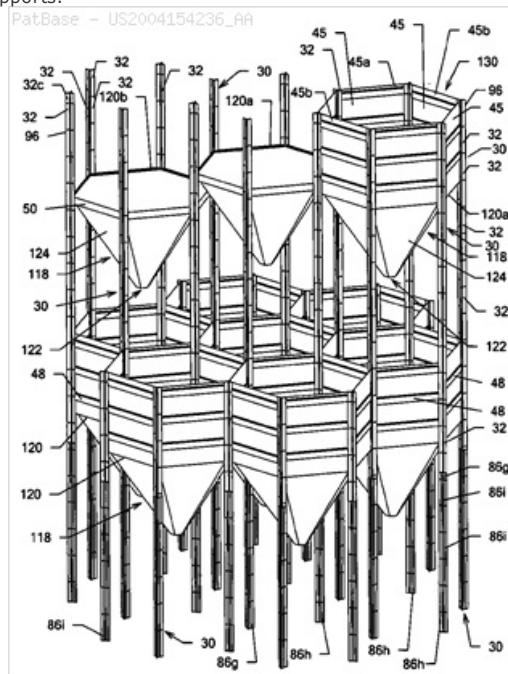
International (IPC 8-9): B65D88/02 B65D88/08 B65G1/00 B65G21/12 B65G41/00 B65G65/00 B65G65/32 B65G69/04 E04C3/32 E04H7/22 (Advanced/Invention); E04C (Subclass/Non-invention)

International (IPC 1-7): B65D88/02 B65G1/00 B65G21/12 B65G47/44 B65G65/32 B65G69/04 E04C3/32 E04H1/00 E04H3/00 E04H5/00 E04H6/00

CPC: B65D88/022 B65D88/08 B65G21/12 B65G41/005 B65G47/72 B65G69/0408 B65G2201/042 B65G15/24 B65G69/0416

European: B65D88/02B B65D88/08 B65G15/24 B65G21/12 B65G41/00A6 B65G47/72 B65G69/04A B65G69/04B L65G201/04B

US: 198/300 198/369.4 198/369.400P 198/569 198/569S 198/588 198/812 198/861.6 414/272 414/283 414/287 414/287P 52/192 52/193 52/194 52/195 52/651.07 52/726.3 52/730.1 52/731.1 52/745.01 52/745.010P 52/745.04 52/745.15 52/745.17 52/79.1 52/79.100P 52/836 52/849

**Family:**

Publication number	Publication date	Application number	Application date
AT351952 E	20070215	AT20040705630T	20040127
AU2004211579 AA	20040826	AU20040211579	20040127
AU2004211579 BB	20100812	AU20040211579	20040127
AU2006276216 AA	20070208	AU20060276216	20060717
AU2006276216 BB	20111027	AU20060276216	20060717
AU2006276216 BI	20111103	AU20060276216	20060717
BRPI0406579 A	20051220	BR2004PI06579	20040127
CA2514987 AA	20050802	CA20042514987	20040127
CA2514987 C	20111018	CA20042514987	20040127
CA2620969 AA	20080111	CA20062620969	20060717
CN100465396 C	20090304	CN200480003517	20040127
CN1748066 A	20060315	CN200480003517	20040127
DE602004004368 D1	20070308	DE200460004368T	20040127
DE602004004368 T2	20071108	DE200460004368T	20040127
EP1592855 A1	20051109	EP20040705630	20040127
EP1592855 B1	20070117	EP20040705630	20040127
EP1915304 A2	20080430	EP20060787520	20060717
IN01626KN2005 A	20070727	IN2005KN01626	20050816
IN235820 B	20090904	IN2005KN01626	20050816
US2004154236 AA	20040812	US20040765028	20040126
US2004154901 AA	20040812	US20040771807	20040203

US2005258015 AA	20051124	US20050190362	20050727
US2007031220 AA	20070208	US20060527240	20060925
US2007031221 AA	20070208	US20060527354	20060925
US2008209848 AA	20080904	US20080151777	20080510
US7074001 BB	20060711	US20040771807	20040203
US7125215 BB	20061024	US20050190362	20050727
US7267517 BB	20070911	US20060527240	20060925
US7267518 BB	20070911	US20060527354	20060925
US7392624 BB	20080701	US20040765028	20040126
US7735293 BB	20100615	US20080151777	20080510
WO04071912 A1	20040826	WO2004US03214	20040203
WO04071912 B1	20041216	WO2004US03214	20040203
WO04072402 A1	20040826	WO2004US02184	20040127
WO07015794 A2	20070208	WO2006US27626	20060717
WO07015794 A3	20070503	WO2006US27626	20060717
ZA200506707 A	20060531	ZA20050006707	20050822

Priority:

US20030445760 20030205 US20030445760P 20030205 US20040765028 20040126
WO2004US02184 20040127 US20040771807 20040203 US20050190362 20050727
WO2006US27626 20060717 US20060527240 20060925 US20060527354 20060925
US20080151777 20080510

Probable Assignee: DWIGHT KINZER

Assignee(s): (std): DWIGHT KINZER ; ERIC KINZER DWIGHT ; KINZER DWIGHT ; KINZER DWIGHT E ; KINZER DWIGHT ERIC

Assignee(s): DWIGHT ERIC KINZER

Inventor(s): (std): DWIGHT ERIC KINZER ; ERIC KINZER DWIGHT ; KINZER DWIGHT E ; KINZER DWIGHT ERIC

Inventor(s): PROCESS EQUIPMENT AND DESIGN LLC ; KINZER DWIGHT

Agent(s): SPRUSON AND FERGUSON; GOWLING LAFLEUR HENDERSON LLP; SCHAEFER MATTHIAS W; DWIGHT E KINZER; DWIGHT ERIC KINZER

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

4) Family number: 12781003 (WO9815484A1)

© PatBase

Title: DISCHARGE DEVICE FOR A SILO, PARTICULARLY ALSO FOR FREE-FLOWING BULK MATERIAL

Abstract: This invention concerns a discharge device (10) for a silo (17), particularly also for free-flowing bulk material, with one or more discharge openings (12) in a lower silo boundary element (11) to be formed and to which are associated drivers, which face the bulk material and slide in a straight line on the silo boundary element for transport of the bulk material into the discharge openings (12). The silo boundary (11) has parallel spaced apart supports (16) and the separation between any two supports (16) forms one or more slit-like discharge openings (12) which is completely and/or partially covered in a repeated and predeterminable way by an associated driver shaped as a cassette element (13) etc. Discharge channels assigned to the discharge openings (12) with helical conveyors (31) form along with the silo (17) a closed unit and also serve for dosed discharge. The helical conveyors (31) convey parallel to or orthogonal to the direction of travel of the drivers, can have intermediate and external discharge openings, and be mounted directly below the silo boundary element (11).

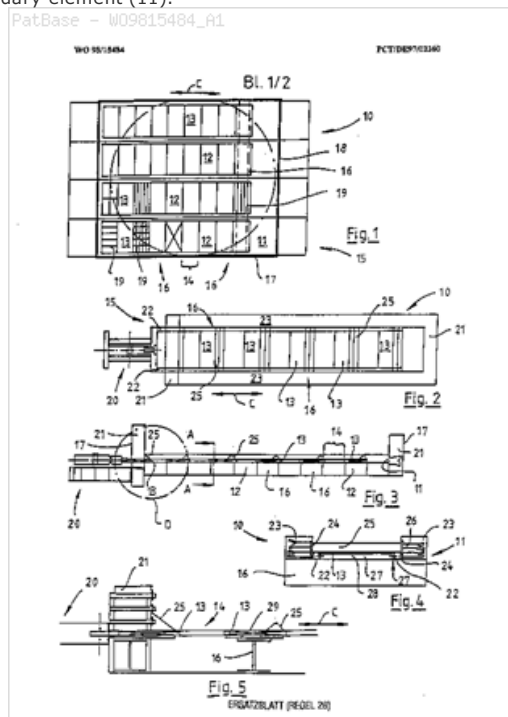
Classifications:

International (IPC 8-9): B65G65/44 (Advanced/Invention); B65G65/00 (Core/Invention)

International (IPC 1-7): B65D88/66 B65D90/60 B65G65/44

CPC: B65G65/44

European: B65G65/44



Family:

Publication number	Publication date	Application number	Application date
DE19640933 A1	19980409	DE19961040933	19961004
EP0929490 A1	19990721	EP19970911124	19971001
WO9815484 A1	19980416	WO1997DE02260	19971001

Priority:

DE19961040933 19961004 WO1997DE02260 19971001

Probable Assignee: LORENZ ECKHARD

Assignee(s): (std): LORENZ ECKHARD

Assignee(s): LORENZ ECKHARD 29614 SOLTAU DE

Inventor(s): (std): LORENZ ECKHARD

Inventor(s): LORENZ ECKHARD 29614 SOLTAU DE

Designated states: AT BE CH CZ DE DK ES FI FR GB GR HU IE IT LI LU MC NL NO PL PT SE

5) Family number: 3160048 (EP0089696A1)

© PatBase

Title: SILO FOR FORAGE.

Abstract: The silo for forage, such as green fodder, coarse maize or the like, consists of side walls which are supported in an essentially air-tight manner on a bottom plate (6) and to the upper edges of which is fastened a foil covering the silo and closing it in an essentially air-tight manner. A pump is provided for sucking air out of the closed interior of the silo. So that the silo can be produced in a size meeting the particular requirements from parts which can be carried by conventional heavy-goods vehicles, its side walls consist of identical essentially plane wall elements (1, 3) which are connected to one another laterally and which are joined together to form a rectangular silo container of the desired size.

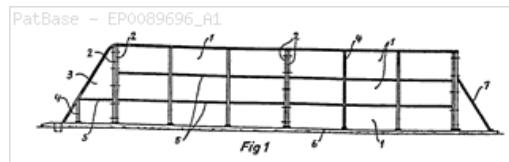
Classifications:

International (IPC 8-9): A01F25/16 E04H7/30 (Advanced/Invention);
A01F25/16 E04H7/00 (Core/Invention)

International (IPC 1-7): A01F25/16 E04H7/24

CPC: E04H2007/225 E04H7/30 A01F25/166 Y02A40/55

European: A01F25/16F E04H7/30

**Family:**

Publication number	Publication date	Application number	Application date
DE3210864 A1	19831013	DE19823210864	19820324
EP0089696 A1	19830928	EP19830102940	19830324

Priority:

DE19823210864 19820324

Probable Assignee: LESSLHUMER JOSEF ING

Assignee(s): (std): LESSLHUMER JOSEF ; LESSLHUMER JOSEF ING

Assignee(s): LESSLHUMER JOSEF ING 4600 WELS OBEROESTERREICH AT

Inventor(s): (std): LESSLHUMER JOSEF ; LESSLHUMER JOSEF ING

Inventor(s): LESSLHUMER JOSEF ING 4600 WELS OBEROESTERREICH AT

Designated states: AT CH DE FR IT LI NL

6) Family number: 180251 (US3737054A)

© PatBase

Title: ROTOR ARM FOR SILO DISCHARGING DEVICES

Abstract: A rotor arm for silo discharging devices which is formed by a leaf spring packet the leaf springs of which are slidably engaging each other and are held together by holding means while a damping device engaging the rotor arm is provided for damping the relaxing movement of the rotor arm in the direction in which the rotor arm rotates during its working operation.

Classifications:

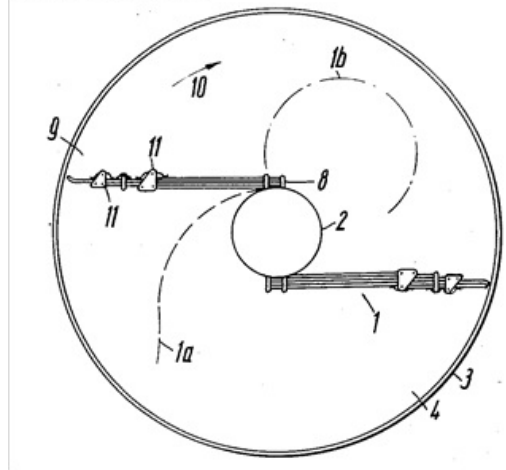
International (IPC 8-9): A01F25/20 (Advanced/Invention);
A01F25/16 (Core/Invention)

International (IPC 1-7): B65D88/54 B65G3/00 B65G3/10 B65G65/48
B65G65/70 B65G69/00 E04H7/00

CPC: A01F25/2018

European: A01F25/20C

US: 222/228 267/53 414/324

**Family:**

Publication number	Publication date	Application number	Application date
AT316422 B	19740515	AT19710004944	19710608
CH531972 A	19721231	CH19710008190	19710607
DE2028901 A1	19711216	DE19702028901	19700612
DE2028901 B2	19810226	DE19702028901	19700612
DE2028901 C3	19811112	DE19702028901	19700612
DE2105134 A1	19720810	DE19712105134	19710204
DE2105134 B2	19810702	DE19712105134	19710204
DE2105134 C3	19820311	DE19712105134	19710204
FR2095216 A1	19720211	FR19710021335	19710611
FR2095216 B1	19750822	FR19710021335	19710611
NO138204 B	19780417	NO19710002200	19710610
NO138204 C	19780726	NO19710002200	19710610
US3737054 A	19730605	US19710151112	19710608

Priority:

DE19702028901 19700612 DE19712105134 19710204

Probable Assignee: SCHWAEBISCHE HUETTENWERKE GMBH**Assignee(s):** (std): SCHWAEBISCHE HUETTENWERKE GMBH

Assignee(s): SCHWAEBISCHE HUETTENWERKE GMBH 7080 AALEN ; SCHWAEBISCHE HUETTENWERKE GMBH 7080 AALEN DE ; SCHWAEBISCHE HUETTENWERKE GMBH DT ; SCHWABISCHE HUTTENWERKE ; SCHWABISCHE HUTTENWERKE DT ; SCHWABISCHE HUTTENWERKE GMBH DT ; SCHWAEBISCHE HUETTENWERKE GESELLSCHAFT MIT BESCHRAENKTER H

Inventor(s): (std): GESSLER H ; GESSLER HANS ; HANS GESSLER**Inventor(s):** GESSLER HANS 7080 AALEN ; GESSLER HANS 7080 AALEN DE ; GESSLER H DT**7) Family number: 7642512 (US4186854A)**

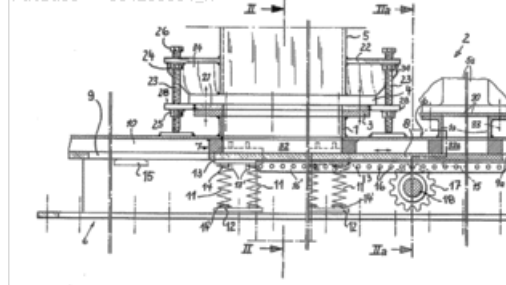
© PatBase

Title: Gate for storage-tank outlet

Abstract: A gating mechanism for selectively opening and closing the bottom outlet of a container such as a tank, bunker or silo, serving for the storage of bulk material, comprises a metallic slider shiftable along the underside of a metallic sealing frame surrounding the outlet, the slider being urged upwardly against that frame by strong compression springs or fluidic jacks counteracting the internal pressure of the goods. The slider, which has a cutout registering with the outlet aperture upon being aligned with the sealing frame, is displaceable between this alignment position and a closure position by a rack on its underside engaged by a driving pinion. A base supporting the slider and forming a channel for the discharged bulk material carries a funnel of rectangular cross-section which defines the outlet and has a flange vertically separated from a discharge port in the container bottom by an interposed spacer frame which can be replaced by a shutter plate of like thickness, e.g. during temporary removal of the slider, upon a raising of the empty tank and a lifting of the spacer frame to a lesser extent with the aid of respective nuts on a set of vertical bolts passing through bores in an external apron of the container body and through slotted lugs of the spacer frame.

Classifications:**International (IPC 8-9):** B65D90/58 (Advanced/Invention);

B65D90/00 (Core/Invention)

International (IPC 1-7): B65D47/00**CPC:** B65D90/587**European:** B65D90/58C**US:** 222/185 222/512 222/561

Family:

Publication number	Publication date	Application number	Application date
US4186854 A	19800205	US19780872832	19780127

Priority:

US19780872832 19780127

Probable Assignee:

TESKE LOTHAR

Assignee(s): (std):

TESKE LOTHAR

Inventor(s): (std):

TESKE LOTHAR

8) Family number: 20118507 (GB748179A)

© PatBase

Title: Improvements in or relating to silos and like storage containers

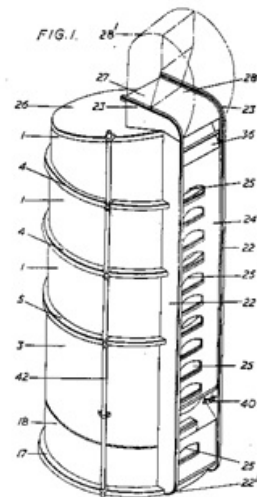
Abstract: 748,179. Silos. PORTASILO, Ltd. May 25, 1954 [June 1, 1953], No. 15228/53. Class 20(1). A lightweight transportable silo for cement or other powdery or granular material comprises a number of cylindrical components 1 of lightweight material, e.g. plywood, secured together coaxially in combination with a reinforcing keel comprising two metal shod timbers 22 extending along the components and serving as a base on which the silo can rest when positioned horizontally during its transport. The silo base comprises a unit 3 with double walls e.g. of plywood, secured to a framework depending from a conical part 2 having a valve controlled outlet 16 and a universally mounted agitator 20. An opening 15 in the unit 3 allows the insertion of a collecting hopper, and a trackway for the hopper may be arranged within the opening. Ladder rungs may be supported between the timbers 22 of the keel, or alternatively a sheet 24 with foot-hold openings 25 may be used. Road wheels may be attached to the lower end of the keel and a towing attachment secured at the other end. Material is supplied to the silo under air pressure, and is fed through a pipe 39 located within the keel structure to an outlet 41. The sloping silo roof 26 has a rectangular opening bounded by side-boards 23 and a back. board 27, and a ventilator 28 is hinged to the back-board and consists of a box-like structure with a curved roof 28¹, a front plate apertured at 35, and a rear plate apertured at 37. Filter plates 34 are arranged in W formation and the air which feeds the material to the silo escapes through the filters and openings 35. Powder, c., trapped above the filters is returned to the silo by raising the ventilator 28 and causing the powder to pass through the openings 37. Reinforcing rings 45 of the type described in Specification 748,178, [Group XXIII], may cover the joints between adjacent cylindrical components.

Classifications:**International (IPC 8-9):** B65D88/30 (Advanced/Invention);

B65D88/00 (Core/Invention)

International (IPC 1-7): B65D88/30 B65G3/04**CPC:** B65D88/30**European:** B65D88/30

PatBase - GB748179_A

**Family:**

Publication number	Publication date	Application number	Application date
ES215672 A1	19541001	ES19540215672	19540531
GB748179 A	19560425	GB19530015228	19530601

Priority:

GB19530015228 19530601

Probable Assignee:

PORTASILO LTD

Assignee(s): (std):

PORTASILLO LTD ; PORTASILO LTD

Assignee(s):

PORTASILLO LIMITED ; PORTASILO LIMITED

Inventor(s): (std):

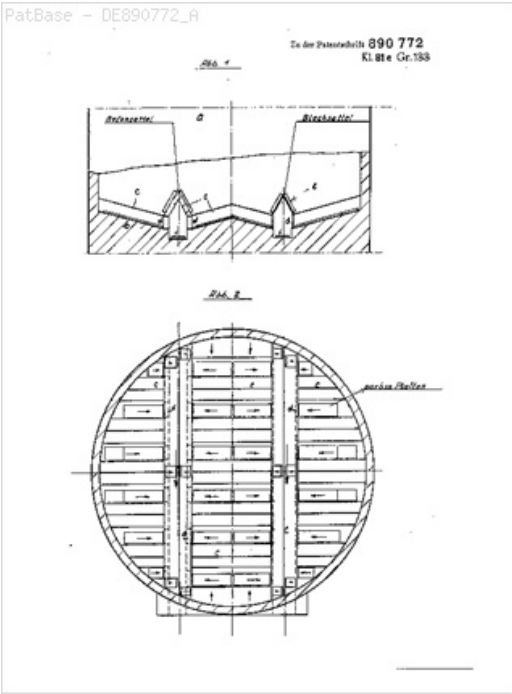
SHEPHERD DONALD WELTON

9) Family number: 21299439 (DE890772 A)

© PatBase

Classifications:

International (IPC 8-9): B65D88/72 (Advanced/Invention);
B65D88/00 (Core/Invention)
International (IPC 1-7): B65D88/72 B65G3/04 B65G3/10 B65G65/72
CPC: B65D88/72
European: B65D88/72



Family:

Publication number	Publication date	Application number	Application date
DE890772 A	00000000		00000000
DE890772 C	00000000		00000000