

WO 2014017954 A1

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Prilling tower

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ABSTRACT

The invention relates to apparatus for the prilling of products, particularly fertilizers, from melts thereof. Proposed is a prilling tower comprising a hollow housing, a melt sprayer, air supply ports, which are equipped with guiding plates and are positioned above a receiving and guiding device, and a prill discharge conveyor. The receiving and guiding device is made of individual sheets, positioned in two planes along opposite sides of the conveyor and at an angle thereto. The sheets are oriented perpendicularly to the conveyor. A continuously operating vibrator is connected to each sheet, causing the vibration thereof. A portion of the guiding plates located in the air supply ports can be installed at an angle in such a way that the inner edge of the plates is positioned lower than the outer edge thereof. The receiving and guiding device can be made of corrugated sheets and/or have an anti-adhesive coating. The technical result consists in minimizing the sticking of unhardened material to the surface of the receiving and guiding device, preventing the formation of large agglomerates, reducing the degradation of the prills, and simplifying the design of the receiving and guiding device.

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DESCRIPTION translated from [Russian](#)

Granulation TOWER

Field of technology

The invention relates to facilities for granulation products from their melts, in particular for the production of granulated fertilizers.

BACKGROUND ART

Known granulating tower, comprising a hollow body, sprinkler melt in the upper part of the window for air supply and receiving-guide device at the bottom of the tower, provided in the form of a conical hopper, a conveyor for discharging the granules (Gorlovskiy DM et al. Technology of urea , L. : Chemistry, 1981, pp. 196-197).

The disadvantages of this design should include prilling tower occurrence unhardened material sticking on the surface of the hopper during operation, which leads to the formation of agglomerates, which when spalling from the surface of the hopper fall into the final product, which leads to disruption requirements for size distribution and the need to install additional equipment granulation tower is for screening, dissolution or break up agglomerates. Large conglomerates Falling down can cause clogging of the outlet hopper. To clear the bunker is necessary to make periodic work stoppages granulation tower, followed by mechanical cleaning the surface of the hopper with hand tools. Such stop is likely to disrupt the continuous operation of the process cycle, while mechanical cleaning can damage the surface of the hopper.

Is known and is the closest to the proposed granulation tower, comprising a hollow body, sprinkler melt in the upper part of the window and the air supply receiver-guide device at the bottom of the tower, provided with means for vibration to operate in a batch mode, a conveyor for discharging the granules (PV Klassen et al. Granulation, M. : Chemistry, 1991, pp. 183-184).

Receiving and guiding device of this installation is designed as a metal frame mounted on a steel conical hopper, consisting of four conical zones, each of which is secured to the frame suspension. On the three upper zones are periodically running vibrators.

The disadvantages of this device should include constructive complexity, and in the same manner as in the above described apparatus, arises during operation of sticking the uncured material on the surface of the hopper and the formation of agglomerates. To remove growths occur through periodic working vibrators attached to the three upper conical zones. In the areas of greatest sticking to the conical zones have metal rods that discourage the build-up when the

CLAIMS (4) translated from [Russian](#)

Granulation TOWER Claims

1. The granulation tower, comprising a hollow body, sprinkler melt in the upper part of the window for supplying air guide plates and provided with means for vibration receiving-guide device at the bottom of the tower conveyor for discharging the granules, characterized in that the receiving and guiding means vsholneno from individual sheets arranged in two planes parallel to the axis of the conveyor, wherein the sheets in each of the planes are arranged in a direction perpendicular to the axis of the conveyor, each of the sheets is provided with means to vibrate the chance of constant operation, the plane in which the sheets are arranged, are arranged at an angle towards each other so that the lower rectilinear edges parallel sheets and placed above the conveyor, the distance between the edges is not more than the width of the conveyor and the remaining adjacent outer edges of the sheet with a clearance to the walls of the housing.
2. Granulation tower of claim 1, wherein said receiving-guide device is made of corrugated sheet, the corrugations of which are directed perpendicularly to the axis of the conveyor.
3. The granulation tower of claim 1, wherein the receiving-guiding device has a release coating.
4. The granulation tower of claim 1, characterized in that a portion of the guide plates located in the windows of the air supply is installed with a slope so that the inner edge of the plates positioned below the outer edge.

vibrator.

Disclosure of invention

Problem to be Solved by the invention is to improve existing plants for producing granulated products.

The technical result obtained by the implementation of the invention is to minimize the buildup of material on the surface of the uncured receiving and guiding device prilling tower, preventing the formation of large agglomerates, granules fracture reduction and simplification of the construction of the guide-receiving device.

To achieve this result suggested granulation tower, comprising a hollow body, sprinkler melt in the upper part of the window for supplying air guide plates and provided with vibration means for receiving and guiding means at the bottom of the tower, a conveyor for discharging the granules, characterized in that the receiving-guide device is made of individual sheets arranged in two planes parallel to the axis of the conveyor, wherein the sheets in each of the planes are arranged in a direction perpendicular to the axis of the conveyor, each of the sheets is provided with means to vibrate the chance of constant operation, the planes in which the sheets are arranged, are angled toward each other so that the lower edge of the rectilinear and parallel sheets placed above the conveyor, the distance between the edges is not more than the width of the conveyor and the remaining adjacent outer edges of the sheet with a clearance to the walls of the housing. Part of guiding plates located in the windows of the air supply may be mounted so that the inner edge of the plates positioned below the outer edge, the receiving-guiding device can be vsholneno of corrugated sheets, the corrugations of which are directed perpendicularly to the axis of the conveyor, and receiving and guiding the device may have a release coating.

In the present invention, the receiving-guiding device prilling tower vsholneno of individual sheets arranged in two dimensions along opposite sides of the conveyor inclined thereto. The sheets are oriented perpendicular to the conveyor. Each of the sheets is joined continuously working vibrator causes its vibration. The constant vibration can prevent sticking of individual pellets not hardened to the surface plates and the formation of agglomerates. Performing receiving-guide device of several individual sheets allows uniform vibration across the surface of the receiving and guiding device and facilitates installation of the structure.

Individual sheets that comprise transceivers guiding device with respect to each other may be arranged as a butt joint with a small gap and overlapping the edges.

Granulation tower may be provided with means for preventing spillage possible granules in the gaps between the sheets of the receiving-guiding device and the surrounding walls of the body of the tower, and the guard plates of the conveyor in the gaps between the individual sheets forming a receiving-guiding device. It may involve various engineering tools, such as visors, rubber or cloth seals etc. Also in the cavity under the receiving-directing device may cause a slight excess air pressure to prevent dust and fine particles.

To increase stiffness and reduce weight of the sheets can be made of corrugated metal.

Located at the bottom of the windows for air guide plates are slanted so that the inner edge of the plate is placed below the outer edge. This provides the direction of the air flow to blow the receiving-surface guide device to form a final trajectory granules at which they collide with the surface of the receiving-guide device under the maximum acute angle. This reduces the risk of fracture and adhesion of granules. Intensive airflow guide surface of the receiving-device also provides additional cooling and hardening of the pellets.

Various embodiments of the invention, depending on the shape of the hull of the granulation tower. In the case of circular section receiving-guide device is made of sheets arranged in two planes forming elliptical segments. The body rectangular sheets are arranged in two planes, having a rectangular shape.

BRIEF DESCRIPTION OF THE DRAWINGS

Summary of the invention illustrated in the accompanying FIG. 1 and 2. FIG. 1 shows a cross-sectional specific embodiment of the proposed tower granulation. FIG. 2 shows a top view of the receiving and guiding means.

In accordance with FIG. 1, 2, granulation tower comprises a cylindrical housing 1, a dispersant 2, windows 3 for supplying air to the guide plates 4, the receiving-guiding device consisting of a flat metal sheet 5 adjacent to the inner surface of the cylindrical body 1 with the gap 6 and 7 placed on the channel bars that through vibration insulators 8 attached to the support structure 9, 10 vibroprivody, January 1 transporter.

The apparatus operates as follows. The melt urea dispersant 2 was sprayed in the upper part of housing 1. During flight droplets freeze and form granules fall on the surface of flat metal sheets 5. flat metal sheet 5 attached permanently working vibroprivody 10 which cause the vibration of flat metal sheets 5. Lower edge straight metal sheets 5 placed one above the conveyor 1. Outside the arcuate edge of the metal sheet 5 abut against the inner surface of the cylindrical body 1 with the necessary clearance 6, preventing their direct contact with the housing 1 during vibration. Part of the airflow, the intake of air is directed at the bottom of the windows for air guide plates 4 3 to blow the surface of the flat sheet metal surface 5. With flat metal sheet conveying device 5 receiving-granules are poured down on the conveyor 1 1, which displays the granules from a prilling tower for subsequent cooling and / or storage.

Industrial Applicability

The invention can be used in the chemical and other industries for granulation products from their melts, in particular for the production of granulated fertilizers.

PATENT CITATIONS

Cited Patent	Filing date	Publication date	Applicant	Title
SU1088777A1 *				<i>Title not available</i>
SU1225613A1 *				<i>Title not available</i>
US4755590 *	10 Nov 1986	5 Jul 1988	Ceskoslovenska Akademie Ved	Method for postpolymerization of polyamide granules after polymerization in melt and an equipment for performing this method

* Cited by examiner

NON-PATENT CITATIONS**Reference**

1	*	KLASSEN P.V. ET AL.: 'Granulirovanie.' KHIMIJA , MOSCOW 1991, page 183, 184
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* Cited by examiner

CLASSIFICATIONS

International Classification	B01J2/04
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LEGAL EVENTS

Date	Code	Event	Description
19 Mar 2014	121	Ep: the epo has been informed by wipo that ep was designated in this application	Ref document number: 13823322 Country of ref document: EP Kind code of ref document: A1
26 Jan 2015	NENP	Non-entry into the national phase in:	Ref country code: DE
19 Aug 2015	122	Ep: pct app. not ent. europ. phase	Ref document number: 13823322 Country of ref document: EP Kind code of ref document: A1

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