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Search 55: [SP]: background [0001] the present invention relates generally to pet food technologies. more specifically, the present invention relates product cooling apparatuses and methods of using same.[0002] there are a number of conventional coolers for cooling extruded pet food products. for example, a typical cooler has a cooling compartment that receives bulk pet food to be cooled. there are usually a number of pivotable bars or slats below an outlet at the bottom of the compartment for collecting the pet food. the mechanical bars or slats are designed to allow the passage of cooling air through and around the pet food accumulated on the slats. the slats can be rotated in one position to form a floor collecting the pet food for cooling and another position to allow the passage of the pet food into a collection hopper. the cooling capability of this type of cooler is limited relative to it's total volume due to the fact that by the nature of it's design, an empty collection hopper must be provided below the slats in order to collect cooled product, and this space provides no cooling function. further, the slats tend to collect a residual of fine product material that remains even when the slats are rotated, which can lead to contamination problems. the mechanical slats also require a substantial effort and safety precautions to clean between production runs and as the moving parts are pneumatically or hydraulically driven through linkages, maintenance can be costly.[0003] another cooler design set forth in u.s. pat. no. 5,906,482 for cooling extruded feed products includes a cooling chamber with an outer wall surrounding the inner chamber. this forms a cooling air circulating chamber right outside the inner cooling chamber. apertures are formed in a wall between the air circulating chamber and the cooling chamber thereby allowing cooling air to flow into the cooling chamber through the apertures. air flow exits near the top as pet food product is dropped from a product inlet in the top of the cooling chamber. the product exits at the bottom of the cooling chamber. nevertheless, there are a number of problems that arise from this design. first, small pet food products such as pellets and fines or coating materials (e.g. fats) thereof may plug the apertures thereby reducing the efficiency of the cooling process. sanitation issues also arise with particulates from the pet food falling through the apertures and remaining in the exterior air circulating chamber. further, since the cooling air apertures extend up the side wall of the cooling chamber, not all cooling air contacts all material in the cooling chamber, limiting cooling efficiency.[0004] therefore, there is a need to provide improved coolers that allow for flexibility in design for alternate capacities and rates for cooling pet food products. summary [0005] the present invention relates generally to pet food technologies. more specifically, the present invention relates to coolers designed for cooling pet food and methods of using same.[0006] in an embodiment, the present invention provides a cooler comprising a chamber having product inlet, a product outlet and an air outlet. the cooler comprises at least one air duct having an exit opening so constructed and arranged for providing airflow into the product outlet.[0007] in an embodiment, air from the air duct provides the only airflow into the product outlet.[0008] in an embodiment, the cooler comprises at least one panel addition attached to the air duct for directing airflow from the exit opening of the air duct to the product outlet of the chamber.[0009] in an embodiment, the cooler comprises a conveyer positioned below the product outlet.[0010] in an embodiment, the cooler comprises at least one

panel addition, wherein the panel addition is attached to the air duct and the conveyor, and wherein the panel addition and the conveyor form an air plenum for directing airflow from the air duct to the product outlet of the chamber.[0011] in an embodiment, the air plenum is isolated from the external atmosphere.[0012] in an embodiment, the conveyor is a type selected from, the group consisting screw, drag, electromechanical vibrating and combinations thereof.[0013] in an embodiment, the air duct is attached to the chamber.[0014] in an embodiment, air flows in a direction from the exit opening of the air duct through the product outlet to the air outlet of the chamber.[0015] in another embodiment, the present invention provides a cooler comprising a chamber having a ceiling and a plurality of walls, lower portions of the walls of the chamber form a product outlet. there is also a product inlet in the chamber and air outlet in the chamber. the cooler also comprises one or more air ducts having an exit opening are so constructed and arranged for providing airflow into the product outlet.[0016] in an embodiment, the lower portions of the walls of the chamber form a product outlet in the shape of a rectangle having a length and a width, the length being greater than the width.[0017] in an embodiment, the air duct is so constructed and arranged for providing airflow along the entire length and width of the product outlet into the product outlet.[0018] in an embodiment, at least one of the lower portions of the walls angles inwardly to the product outlet. [0019] in an alternative embodiment, the present invention provides a pet food product cooler comprising a chamber comprising a product inlet, a product outlet and an air inlet at least one air duct having an exit opening so constructed and arranged for providing airflow into the product outlet and a conveyor positioned below the product outlet. the air duct and the conveyor form an air plenum for directing airflow from the air duct to the product outlet of the chamber.[0020] in another embodiment, the present invention provides a method for manufacturing a pet food product. for example, the method comprises transferring the pet food product to a cooling chamber having a product inlet, a product outlet, an air outlet and a conveyor positioned below the product outlet. the pet food product is deposited in the chamber through the product inlet and accumulates in the chamber and on the conveyor through the product outlet. airflow is provided to the product outlet of the cooling chamber while the pet food product is settling on the conveyor. the airflow travels through the pet food product exiting the product outlet and through the pet food product accumulated in the chamber. the pet food product that has settled on the conveyor is removed after the product has been sufficiently cooled.[0021] an advantage of the present invention is to provide a cooler that is capable of cooling pet food at a high rate while maintaining the desired retention time within the cooler.[0022] another advantage of the present invention is to provide a pet food cooler apparatus that requires less maintenance than conventional coolers.[0023] yet another advantage of the present invention is to provide a pet food cooler apparatus that requires less cleaning effort between production runs.[0024] still another advantage of the present invention is to provide a cooler that is simple to operate does not require mechanical or hydraulic slats for operation.[0025] another advantage of the present invention is to provide a cooler that is capable of handling coated pet food and particulates thereof without contamination issues.[0026] yet another advantage of the present invention is to provide a cooler that is capable of cooling coated pet food and particulates thereof without having a reduced efficiency in the cooling rate.[0027] additional features and advantages are described herein, and will be apparent from, the following detailed description and the figures. brief description of the figures [0028] fig. 1 is a perspective view of the cooler in one embodiment of the present invention.[0029] fig. 2 is a side view of the cooler in another embodiment of the present invention.[0030] fig. 3 is a side view of the cooler illustrating the direction of the airflow in an alternative embodiment of the present invention. detailed description [0031] the present invention relates generally to pet food technologies. more specifically, the present invention relates to engineered coolers or cooler apparatuses that cool pet food products and methods of using same. the pet food products can be, for example, any suitable pet food product that require cooling or temperature adjustment such as extruded pet foods, coated pet foods, pellets, tables, etc.[0032] in an embodiment illustrated in fig. 1, the cooler 2 comprises a hopper, container or chamber 4 having product inlet, a product outlet and an air outlet. the cooler also comprises one or more air ducts having an exit opening so constructed and arranged for providing airflow into the product outlet.[0033] in an embodiment illustrated in figs. 1-2, the cooler 2. comprises a chamber 4 having a plurality of walls 14. lower portions 16 of the walls 14 form a product outlet 22. a product inlet 24 in the chamber 4 and an air outlet 26 are also in the chamber 4, it should be appreciated that the product inlet 24 and the air outlet 26 can be located at any suitable position in the chamber 4. for example, in the embodiment illustrated in fig. 2, the air outlet 26 is located in a ceiling 12 of the chamber 4, and the product inlet 24 is also located in the ceiling 12, such that pet food product enters and cooling air exits at the top of the c (Results 7)

Search 29 or 55 (Results 14)
56:

Title:

APPARATUS FOR COOLING
GRANULAR MATERIALS

Abstract:

Source: US2861353A (Claim 1) 1.
What is claimed is: 1. In an apparatus for cooling hot granular material, a first member comprising a substantially horizontal perforated grate, a second member comprising a substantially vertical shaft mounted over and adjacent to said grate, a motor connected to one of said members to rotate said one member about a vertical axis, means for delivering material to be treated to the top of said shaft, a distributor for distributing said material in a homogeneous mixture of grain sizes to cover said grate evenly to build up a column of material within said shaft ...

Probable Assignee:

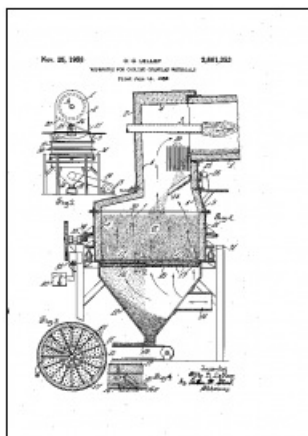
ALLIS CHALMERS MFG CO

Assignee(s):(std):

ALLIS CHALMERS MFG CO

Assignee(s):

ALLIS CHALMERS MANUFACTURING
COMPANY



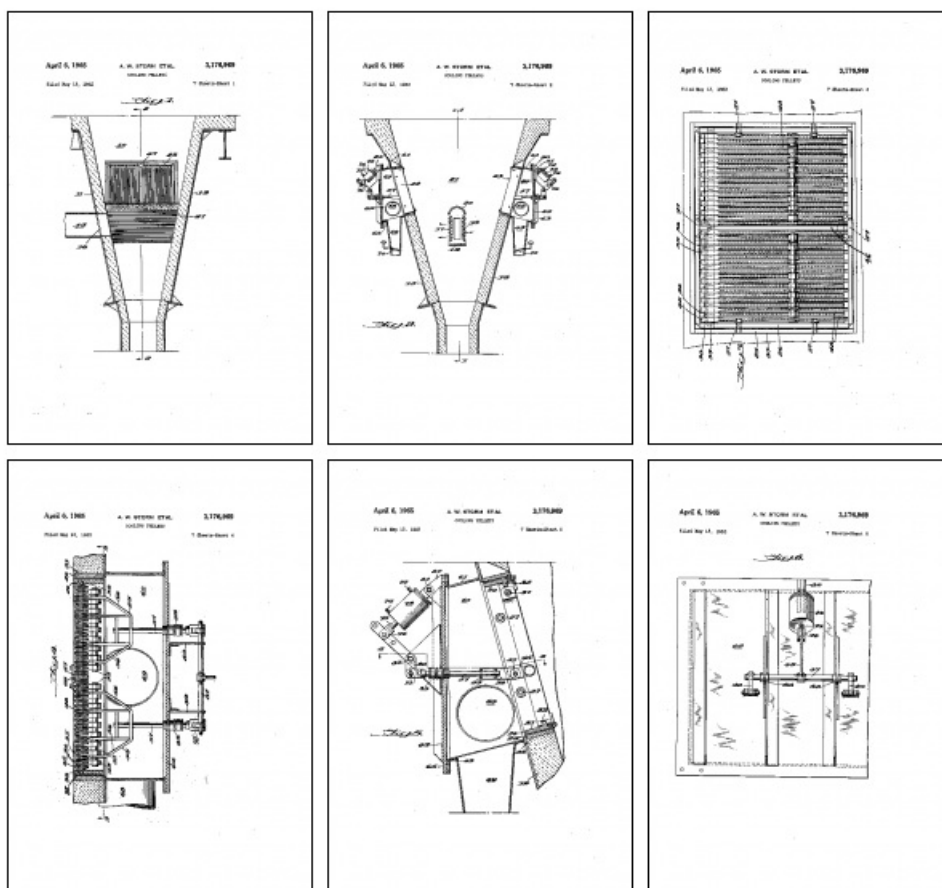
Title:
COOLING PELLETS

Abstract:

Source: US3176969A (Claim 1)
What we claim is: 4. In a process of treating pellets of finely divided solid material involving feeding the pellets to the upper part of a column of such pellets gravitationally descending through a generally vertical shaft-type indurating furnace, heating the pellets in the upper part of said column and thereafter cooling the pellets by forcing a current of cooling gas through such pellets column and finally discharging the so-called pellets from the furnace, the improvement, which consists in introducing the cooling gas into the column intermediate ...

Probable Assignee:
MIDLAND ROSS CORP

Assignee(s):(std):
MIDLAND ROSS CORP



1 more images available

Title:
PRODUCT PELLETING AND COOLING
APPARATUS**Abstract:**

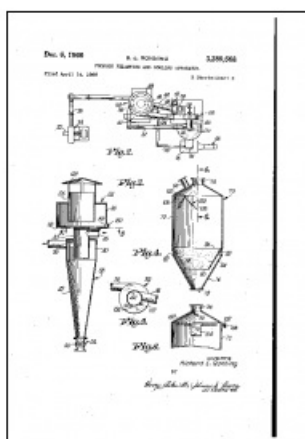
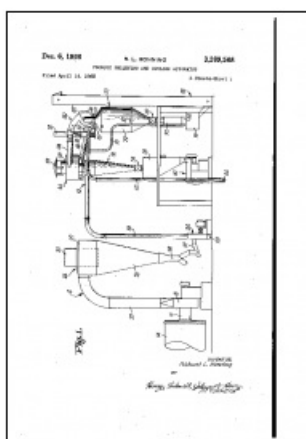
Source: US3289568A (Claim 1) 1. Apparatus for processing a dehydrated crop comprising: a grinder; a pelleter; a cyclone separator for receiving ground crop from the grinder, the separator having an air outlet and particulate discharge means for discharging heavy particles of crop to the pelleter; first conduit means between the grinder and the separator; first blower means coupled with the separator air outlet for maintaining negative fluid pressure in the separator and in the first conduit means sufficient to effect pneumatic conveying of ground crop to the separator; a fluid bed cooler for ...

Probable Assignee:

RONNING RICHARD L

Assignee(s):(std):

RONNING RICHARD L



Title:
TWO-STAGE MATERIAL COOLER

Abstract:

Source: US3705620A A two-stage material cooler particularly adapted for cooling burning or burned material. The cooler includes a first stage direct cooler such as a grate cooler wherein air is blown through the material as it is discharged from a furnace such as a rotary kiln. The air heated by the hot material is returned as combustion air to the furnace. The partially cooled material is passed through a material breaker and supplied to an indirect cooler for further cooling. The indirect cooler includes a plurality of bins each having a plurality of spaced apart tubes therein. Cooling ...

Probable Assignee:

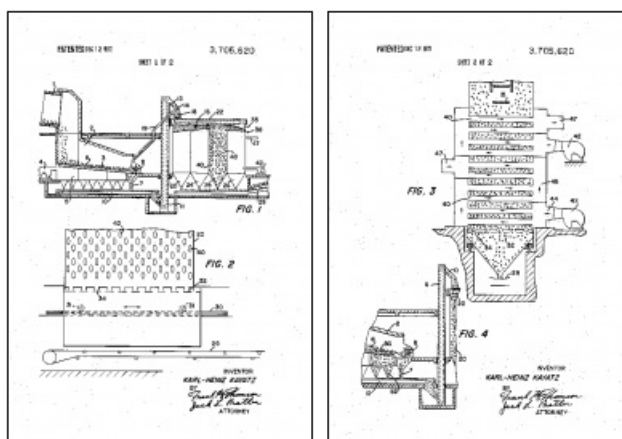
PETERS AG CLAUDIUS

Assignee(s):(std):

E J JUSTUS ; PETERS CLAUDIUS AG
; PETERS AG CLAUDIUS

Assignee(s):

PETERS C AG ; KARL HEINZ KAYATZ
; CLAUDIUS PETERS A G ;
CLAUDIUS PETERS A G
KAPSTADTRING 1 A HAMBOURG ALL
; CLAUDIUS PETERS A G
KAPSTADTRING 1 A HAMBOURG
ALLEMAGNE ; CLAUDIUS PETERS AG
; CLAUDIUS PETERS
AKTIENGESELLSCHAFT



Title:
APPARATUS FOR COOLING
PARTICLES**Abstract:**

Source: US3721017A Apparatus for cooling heated pieces of matter, particularly calcined lime pebbles or particles in which the hot material to be cooled is passed through a hopper and cooled by air introduced under pressure at the perimeter of the mass through bias aligned louvers in the side walls of the hopper. A particular aspect of the invention is the alignment of the louvers at an angle to horizontal to establish different length air paths through the mass to compensate for the different resistances to flow presented by the surface angle of repose of the material and the natural ...

Probable Assignee:

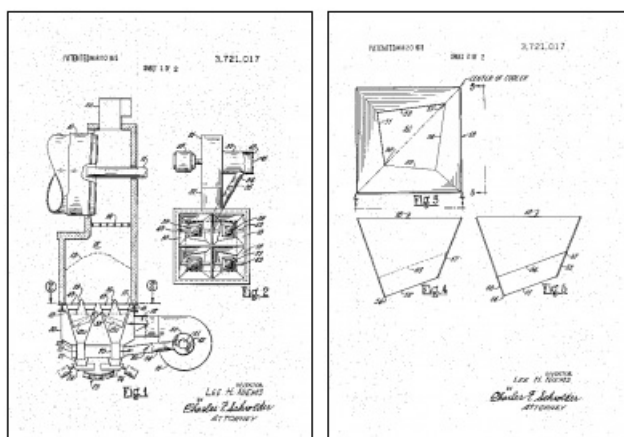
KENNEDY VAN SAUN CORP

Assignee(s):(std):

NIEMS L ; NIEMS LEE H

Assignee(s):

NIEMS LEE H 2702 BRASSIE STREET
FLOSSMOR ETAT D ILLINOIS E U A ;
NIEMS L US ; KENNEDY VAN SAUN
CORP ; KENNEDY VAN UN DA
CORPNVSA



Title:

COOLING MATERIAL FROM A KILN

Abstract:

Source: US3815253A A method and mechanism for cooling granulate material which includes heating the material in a kiln and directing the material from a kiln into an upper inlet opening of a vertical cooling chamber with the material passing downwardly to flow out of a lower material discharge opening from the cooling chamber, and drawing air from the outside through the material at the discharge opening and forcing said air by an air pump into the material within the cooling chamber with the air flowing upwardly and passing into the kiln. A portion of the air directed into the material also ...

Probable Assignee:

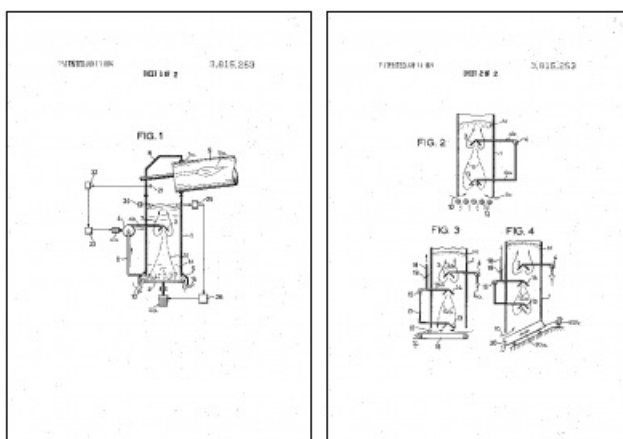
KLOECKNER HUMBOLDT DEUTZ AG

Assignee(s):(std):

KLOECKNER HUMBOLDT DEUTZ AG

Assignee(s):

KLOCKNER HUMBOLDT DEUTZ
AKTIENGESELLSCHAFT ; KLOCKNER
HUMBOLDT DEUTZ A G ; KLOCKNER
HUMBOLDT DEUTZ A G DEUTZ
MULHEIMERSTRASSE 111 KOLN80
ALLEMAGNE ; KLOCKNER HUMBOLDT
DEUTZ AG ; KLOCKNER HUMBOLDT
DEUTZ AG DT



Title:
COOLING DEVICE FOR KILN
MATERIAL

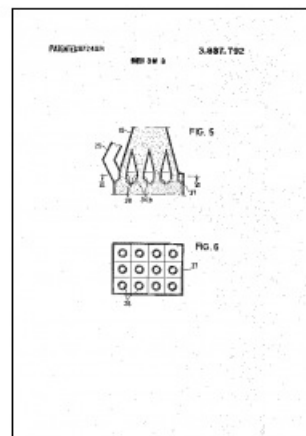
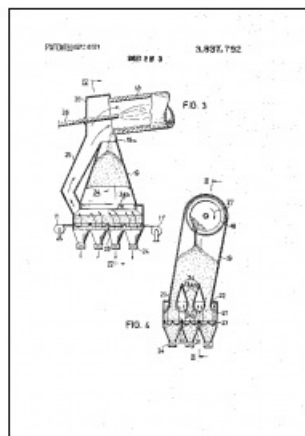
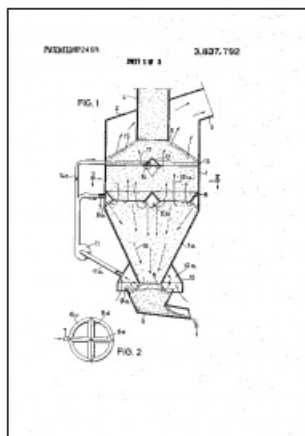
Abstract:

Source: US3837792A A structure for cooling particulate hot kiln material by contact with cooling air including a cooling chamber having an upper receiving end with a lower discharge end and a rotary gas fired kiln discharging into the upper end through a feed conduit extending into the upper end of the chamber, an upper downwardly facing air distribution device, a lower downwardly facing air distribution device having radially extending spokes and an outer portion lying adjacent the wall of the cooling chamber, and opening at the lower end discharging into the hopper with an air intake ...

Probable Assignee:
KLOCKNER HUMBOLDT DEUTZ AG

Assignee(s):(std):
KLOCKNER HUMBOLDT DEUTZ AG

Assignee(s):
KLOCKNER HUMBOLDT DEUTZ AG
5000 KOELN ; KLOCKNER
HUMBOLDT DEUTZ
AKTIENGESELLSCHAFT ; KLOCKNER
HUMBOLDT DEUTZ
AKTIENGESELLSCHAFT ; KLOCKNER
HUMBOLDT DEUTZ AKTIENGESELL
SCHAFT ; DEUSSNER HERBERT ;
KLOCKNER HUMBOLDT DEUTZ ;
KLOCKNER HUMBOLDT DEUTZ A G ;
KLOCKNER HUMBOLDT DEUTZ A G
DEUTZ MULHEIMER STR 111 5
KOLN80 ALLEMAGNE ; KLOCKNER
HUMBOLDT DEUTZ AG ; KLOCKNER
HUMBOLDT DEUTZ AG DT ;
KLOCKNER HUMBOLDT DEUTZ
AGAF



Title:

Granulation of urea phosphate from urea and merchant-grade phosphoric acid

Abstract:

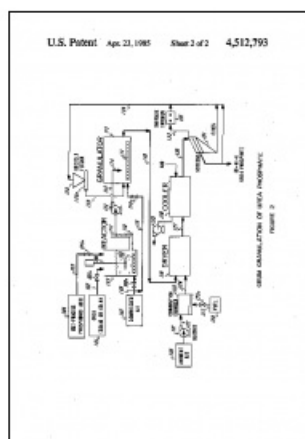
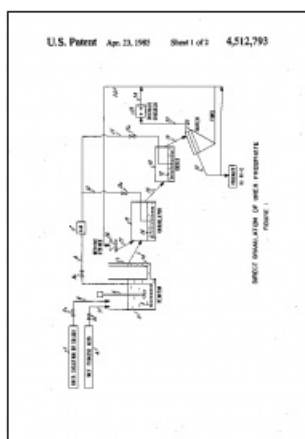
Source: US4512793A A process for direct granulation of unpurified urea phosphate from urea and merchant-or filter-grade wet-process phosphoric acid to produce a product with exceptional satisfactory physical and chemical properties for direct application to the soil or for use in production of fluid fertilizers. The process involves the utilization of sweep air in both the reactor and the granulator to remove water from the heat-sensitive urea phosphate mixture to enhance the granulation characteristics of the product. Product drying with applied heat after granulation is essentially ...

Probable Assignee:

TENNESSEE VALLEY AUTHORITY

Assignee(s):(std):

HARRISON CECIL P ; TENNESSEE VALLEY AUTHORITY



Title:

Device for cooling and/or drying bulk goods

Abstract:

Source: US4887364A Disclosed is to a device for cooling and/or drying bulk goods, provided with a bunker having a supply opening for the material to be cooled, the supply opening being located near the upper side of the bunker, and with a single grate construction located near the bottom side of the bunker. The grate construction is provided with a number of bar-shaped members extending at least substantially parallel to each other. Further there is a mechanism for supplying cooling and/or drying air to the interior of the bunker through the grate construction at the bottom side of the ...

Probable Assignee:

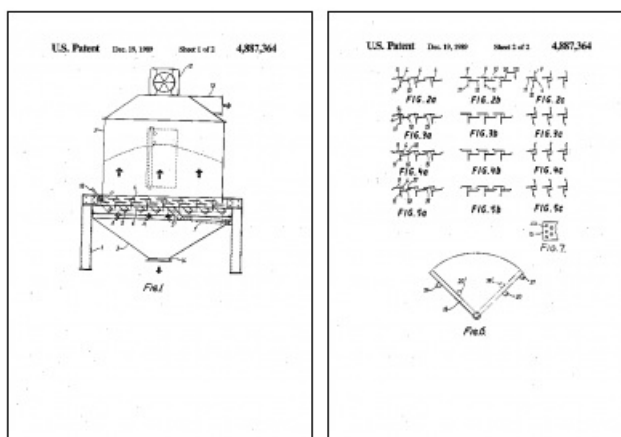
JOHNSON DIVERSEY INC

Assignee(s):(std):

GEELEN TECHNIEK ; GEELEN
TECHNIEK BV ; HEEREN TEFUNIKU
BV

Assignee(s):

JOHNSON DIVERSEY INC ; GEELEN
TECHNIEK PETER SCHREURS WEG 38
PO BOX 4007 6 ; GEELEN TECHNIEK
TE HAELEN BV ; GEELEN TECHNIEK
B V ; GEELEN TECHNIEK B V HAELEN
NL ; GEELEN TECHNIEK B V TE
HAELEN



Title:

Counterflow air cooler for granular materials

Abstract:

Source: US5375342A An apparatus is provided for cooling warm granular product. The apparatus includes a grate system having a first grate overlying and second grate. The first grate has a plurality of parallel generally spaced apart members, whereas the second grate has a plurality of parallel equally spaced apart beams. The first and second grate reciprocate relative to each other between a first position in which the product is retained on the grate system and a second position in which the product flows through the grate system. Each of the members in the first grate includes an air flow ...

Probable Assignee:

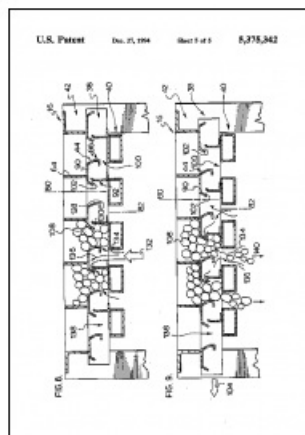
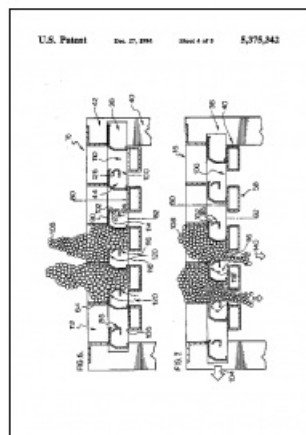
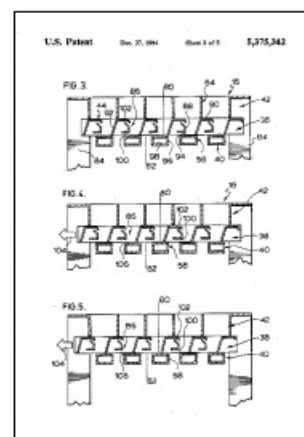
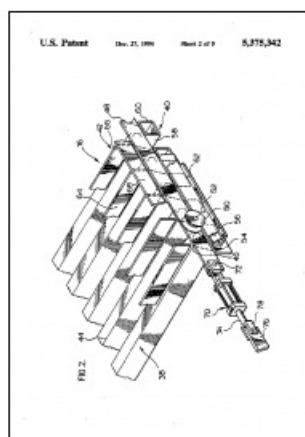
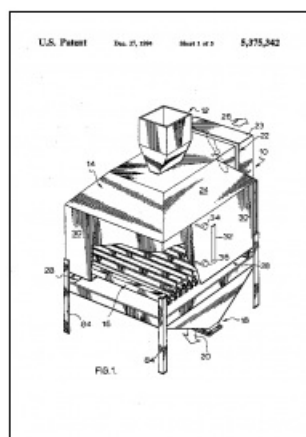
DONMAR WELDING AND FABRICATING L

Assignee(s):(std):

DONMAR WELDING AND FABRICATING L

Assignee(s):

DONMAR WELDING AND FABRICATING LTD ; DONMAR WELDING AND FAB



Title:

Double wall vertical cooler

Abstract:

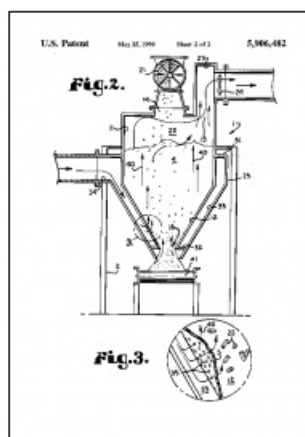
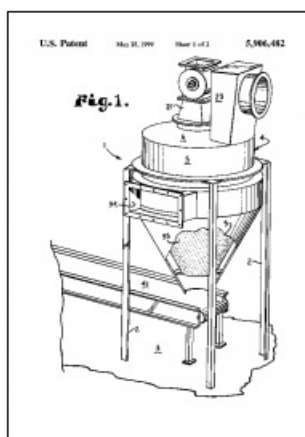
Source: US5906482A A double wall vertical cooler designed for cooling extruded feed products and the like includes a cooling chamber with an upper cylindrical section and a lower frustoconical section. An outer wall surrounds the frustoconical section of the cooling chamber to form a cooling air circulating chamber. Apertures formed in a wall between the air circulating chamber and the cooling chamber allow cooling air to flow into the cooling chamber near the bottom with air flow exiting near the top as feed product is dropped from a product inlet in the top of the cooling chamber with ...

Probable Assignee:

EXTRU TECH INC

Assignee(s):(std):

EXTRU TECH INC



Title:
PROCESS FOR DRYING HIGH-LACTOSE AQUEOUS FLUIDS

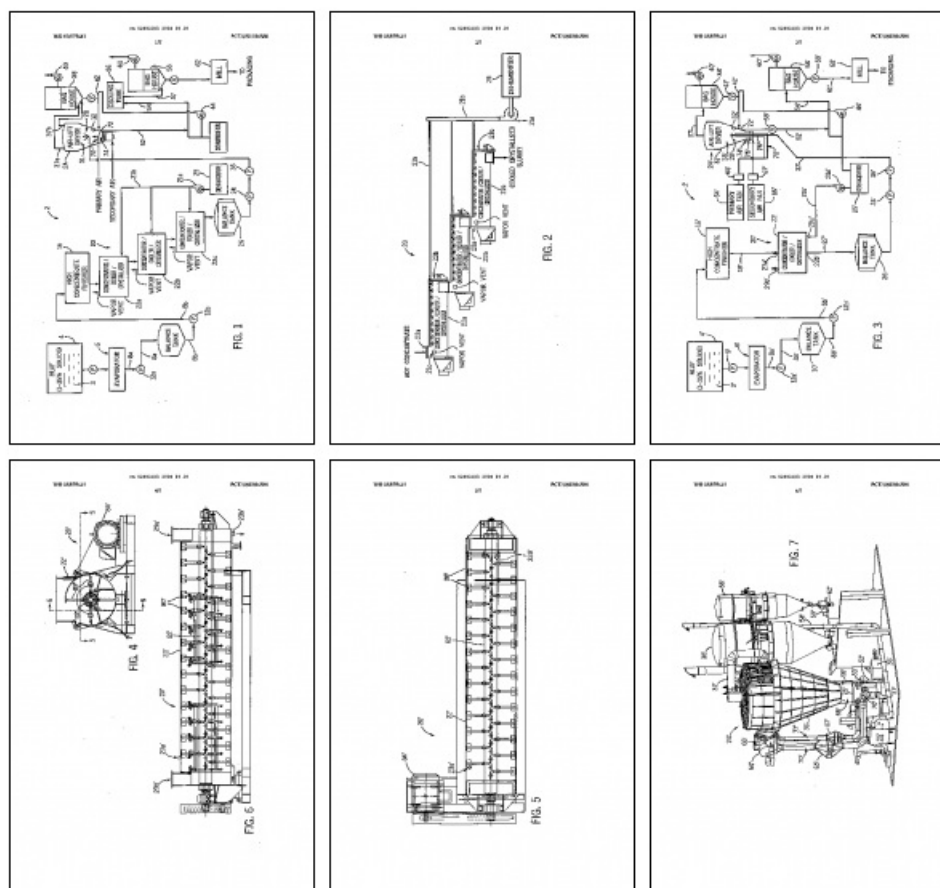
Abstract:

Source: US2003200672A Systems and methods for processing a high-lactose aqueous fluid (HLAF), such as permeate from ultrafiltration of whey fluid, are described. The preferred process includes concentrating HLAF containing from about 1 to about 35 percent solids, wherein at least 50 percent of the solids are lactose, to form a concentrated HLAF containing from about 45 to about 65 percent solids; further concentrating the HLAF to form a highly concentrated HLAF containing from about 70 to about 80 percent solids; cooling the highly concentrated HLAF with a gaseous fluid to create a cooling, ...

Probable Assignee:
RELCO UNISYSTEMS CORP

Assignee(s):(std):
KELLER A K ; KELLER A KENT ;
KELLER TECHNOLOGIES INC ;
RELCO LLC ; RELCO UNISYSTEMS
CORP

Assignee(s):
RELCO LLC WILLMAR



1 more images available

Title:
PRODUCT COOLING APPARATUSES

Abstract:
Source: US2016018150A Coolers for cooling pet food products and methods regarding same are presented. In an embodiment, the present invention provides a cooler comprising a chamber having product inlet, a product outlet and an air outlet, and at least one air duct having an exit opening so constructed and arranged for providing airflow into the product outlet.

Probable Assignee:
NESTEC SA

Assignee(s):(std):
NESTEC SA

Assignee(s):
NESTEC S A

