

## Title (en)

Device for maintaining temperature of bulk material

## Title (de)

Vorrichtung zum Temperieren von Schüttgut

## Title (fr)

Dispositif pour maintenir la température de matière en vrac

## Publication

**EP 1580511 B1 20190306 (DE)**

## Application

**EP 05005327 A 20050311**

## Priority

- DE 102004014349 A 20040324
- DE 102004041375 A 20040825

## Abstract (en)

[origin: EP1580511A2] An outer housing(5) contains a heat exchange section(2) comprising heat exchanger tubes(7) running downwards in the housing. Heat transfer fluid enters the housing at a feed point(8) and leaves via an outlet(9). An inlet for loose material exists at the upper end of the heat exchanger tubes and a material outlet at the lower end of the tubes. A buffer section(1) for loose material(20) is located prior to the upper end of the heat exchanger tubes(7). A material discharge section(3) lies below the lower end of the tubes. All tubes are held at their upper end in an inlet tube base(14) with feeding funnels(18) for each tube widening in the upward direction. The angle of entry(alpha ) of each funnel is 30-120[deg], preferably 40-100[deg]. Inside the housing(5) diverters produce a meandering fluid flow around the tubes. A compressed gas feed enters the discharge section(3) and feeds pulses of gas pressure. The heat exchange section(2) has a circular cross-section. Tubes have 2-12, preferably 3-8, equally spaced internal ribs running along the length. Ribs either connect with each other at the tube center axis or have free ends which stop short of the axis. A vibrator(21) may be located in the heat exchanger section(2) and partial vacuum can be applied to the plant. The relationship between the tube outer diameter(D) and spacing(a) of radially adjacent tubes is  $1.10D=a=1.25D$ , preferably  $1.15D=a=1.20D$ . The relationship between the internal diameter(d) of the tubes and the maximum particle diameter(c) is  $15c=d$ , preferably  $10c=d$ .

## IPC 8 full level

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## Citation (examination)

- DE 2552891 A1 19760526 - CPC INTERNATIONAL INC
- US 2240347 A 19410429 - PAGE JR JAMES M, et al
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- DATABASE WPI Section Ch Week 198705, Derwent World Patents Index; Class C04, AN 1987-035021

## Cited by

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## DOCDB simple family (application)

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