

F26 DRYING

F26B DRYING SOLID MATERIALS OR OBJECTS BY REMOVING LIQUID THEREFROM (drying devices for combines A01D 41/133; racks for drying fruit or vegetables A01F 25/12; drying foodstuffs A23; drying hair A45D 20/00; body-drying implements A47K 10/00; drying household articles A47L; drying gases or vapours B01D; chemical or physical processes for dewatering or like separating liquids from solids B01D 43/00; centrifugal apparatus B04; drying ceramics C04B 33/30; drying yarns or fabrics in association with some other form of treatment D06C; drying frames for laundry without heating or positive air circulation, domestic laundry-or spin-driers, wringing or hot pressing laundry D06F; furnaces, kilns, ovens F27)

Processes using enzymes or micro-organisms in order to:

- (i) liberate, separate or purify a pre-existing compound or composition, or to
 - (ii) treat textiles or clean solid surfaces of materials
- are further classified in subclass C12S. [5]

PROCESSES FOR DRYING

Preliminary treatment 1/00
Processes: with heat; without heat;
by combination of both types 3/00; 5/00;
7/00

MACHINES OR APPARATUS FOR DRYING

With articles to be dried at rest or
locally agitated, domestic airing 9/00
With non-progressive movement 11/00

With progressive movement: for
fabrics or yarns; for articles and
compact batches; for material not in
compact batches 13/00; 15/00;
17/00

Other kinds 19/00

Combinations using at least two of
the above kinds 20/00

ARRANGEMENTS OR DETAILS OF GENERAL APPLICATIONS

Arrangements for air or gas for
drying; heating 21/00; 23/00
Other details 25/00

Processes for drying

1/00 Preliminary treatment of solid materials or objects to facilitate drying

3/00 Drying solid materials or objects by processes involving the application of heat (in specific machines or apparatus F26B 9/00 F26B 19/00)

3/02 . by convection, i.e. heat being conveyed from a heat source to the materials or objects to be dried by a gas or vapour, e.g. air

3/04 . . the gas or vapour circulating over, or surrounding, the materials or objects to be dried (F26B 3/14 takes precedence)

3/06 . . the gas or vapour flowing through the materials or objects to be dried (F26B 3/14 takes precedence)

3/08 . . . so as to loosen them, e.g. to form a fluidised bed

3/084 . . . with heat exchange taking place in the fluidised bed [5]

3/088 . . . using inert thermally-stabilised particles [5]

3/092 . . . agitating the fluidised bed, e.g. by vibrating or pulsating [5]

3/097 . . . using a magnetic field to stabilise the fluidised bed [5]

3/10 . . the gas or vapour carrying the materials or objects to be dried with it

3/12 . . . in the form of a spray

3/14 . . the materials or objects to be dried being moved by gravity

3/16 . . . in a counter-flow of the gas or vapour

3/18 . by conduction, i.e. the heat is conveyed from the heat source, e.g. gas flame, to the materials or objects to be dried by direct contact

3/20 . . the heat source being a heated surface (F26B 3/22 takes precedence)

3/22 . . the heat source and the materials or objects to be dried being in relative motion, e.g. of vibration

3/24 . . . the movement being rotation

3/26 . . . the movement being performed by gravity

3/28 . by radiation, e.g. from the sun

3/30 . . from infra-red-emitting elements

3/32 . by development of heat within the materials or objects to be dried

3/34 . . by using electrical effects

3/347 . . . Electromagnetic heating, e.g. induction heating or heating using microwave energy [4]

3/353 . . . Resistance heating [4]

3/36 . . by using mechanical effects, e.g. by friction (by using ultrasonic vibration F26B 5/02)

5/00 Drying solid materials or objects by processes not involving the application of heat (separating liquids from solids by straining B01D; replacing liquids in wet solids by other liquids, e.g. water by spirit, B01D 12/00; drying by electrophoresis B01J)

5/02 . by using ultrasonic vibrations

5/04 . by evaporation or sublimation of moisture under reduced pressure, e.g. in a vacuum

5/06 . . the process involving freezing

5/08 . by centrifugal treatment

5/10 . . the process involving freezing

5/12 . by suction

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- 5/14 . by applying pressure, e.g. wringing; by brushing; by wiping
- 5/16 . by contact with sorbent bodies, e.g. absorbent mould; by admixture with sorbent materials
- 7/00 **Drying solid materials or objects by processes using a combination of processes not covered by a single one of groups F26B 3/00 or F26B 5/00**

Machines or apparatus for drying

- 9/00 **Machines or apparatus for drying solid materials or objects at rest or with only local agitation; Domestic airing cupboards**
 - 9/02 . in buildings (special types of buildings E04H)
 - 9/04 . in presses or clamping devices
 - 9/06 . in stationary drums or chambers
 - 9/08 . . including agitating devices
 - 9/10 . in the open air; in pans or tables in rooms; Drying stacks of loose material
- 11/00 **Machines or apparatus for drying solid materials or objects with movement which is non-progressive**
 - 11/02 . in moving drums or other mainly-closed receptacles (F26B 11/18 takes precedence)
 - 11/04 . . rotating about a horizontal or slightly-inclined axis
 - 11/06 . . . with stirring devices which are held stationary
 - 11/08 . . rotating about a vertical or steeply-inclined axis
 - 11/10 . . . with stirring devices which are held stationary
 - 11/12 . in stationary drums or other mainly-closed receptacles with moving stirring devices (F26B 11/22 takes precedence)
 - 11/14 . . the stirring device moving in a horizontal or slightly-inclined plane
 - 11/16 . . the stirring device moving in a vertical or steeply-inclined plane
 - 11/18 . on or in moving dishes, trays, pans, or other mainly-open receptacles
 - 11/20 . . with stirring devices which are held stationary
 - 11/22 . on or in stationary dishes, trays, pans, or other mainly-open receptacles, with moving stirring devices
- 13/00 **Machines or apparatus for drying fabrics, fibres, yarns, or other materials in long lengths, with progressive movement**
 - 13/02 . with movement in a straight line
 - 13/04 . . using rollers
 - 13/06 . with movement in a sinuous or zig-zag path
 - 13/08 . . using rollers
 - 13/10 . Arrangements for feeding, heating, or supporting materials; Regulating movement, tension, or position of materials (heating processes F26B 3/00)
 - 13/12 . . Regulating movement, tension, or position of material
 - 13/14 . . Rollers (sorbent surfaces F26B 13/26)
 - 13/16 . . . perforated (F26B 13/18 takes precedence; for applying suction F26B 13/30)
 - 13/18 . . . heated; cooled
 - 13/20 . . Supporting materials by fluid jets, e.g. air
 - 13/22 . . Arrangements of gas flames
 - 13/24 . Arrangements of devices using drying processes not involving heating (such processes per se F26B 5/00)
 - 13/26 . . using sorbent surfaces, e.g. bands or coverings on rollers

- 13/28 . . for applying pressure; for brushing; for wiping
- 13/30 . . for applying suction, e.g. through perforated rollers
- 15/00 **Machines or apparatus for drying objects with progressive movement; Machines or apparatus with progressive movement for drying batches of material in compact form** (F26B 13/00, F26B 17/00 take precedence; conveyers in general B65G)
 - 15/02 . with movement in the whole or part of a circle
 - 15/04 . . in a horizontal plane
 - 15/06 . . . involving several planes, one above the other
 - 15/08 . . in a vertical plane
 - 15/10 . with movement in a path composed of one or more straight lines, e.g. compound
 - 15/12 . . the lines being all horizontal or slightly inclined
 - 15/14 . . . the objects or batches of materials being carried by trays or racks
 - 15/16 . . . the objects or batches of materials being carried by wheeled trucks
 - 15/18 . . . the objects or batches of materials being carried by endless belts
 - 15/20 . . the lines being all vertical or steeply inclined
 - 15/22 . . . the objects or batches of materials being carried by endless belts
 - 15/24 in a zig-zag path
 - 15/26 . with movement in a helical path
- 17/00 **Machines or apparatus for drying materials in loose, plastic, or fluidised form, e.g. granules, staple fibres, with progressive movement** (F26B 13/00 takes precedence)
 - 17/02 . with movement performed by belts carrying the materials; with movement performed by belts propelling the materials over stationary surfaces
 - 17/04 . . the belts being all horizontal or slightly inclined (F26B 17/08 takes precedence)
 - 17/06 . . the belts being all vertical or steeply inclined (F26B 17/08 takes precedence)
 - 17/08 . . the belts being arranged in a sinuous or zig-zag path
 - 17/10 . with movement performed by fluid currents, e.g. issuing from a nozzle (F26B 3/08 takes precedence) [5]
 - 17/12 . with movement performed solely by gravity
 - 17/14 . . the materials moving through a counter-current of gas
 - 17/16 . . the materials passing down a heated surface
 - 17/18 . with movement performed by rotating helical blades or other rotary conveyers moving materials in stationary chambers
 - 17/20 . . the axis of rotation being horizontal or slightly inclined
 - 17/22 . . the axis of rotation being vertical or steeply inclined
 - 17/24 . with movement performed by shooting or throwing the materials
 - 17/26 . with movement performed by reciprocating or oscillating conveyers propelling materials over stationary surfaces; with movement performed by reciprocating or oscillating shelves, sieves, or trays
 - 17/28 . with movement performed by rollers or discs with material passing over or between them, e.g. suction drum, sieve
 - 17/30 . with movement performed by rotary or oscillating containers; with movement performed by rotary floors

- 17/32 . . the movement being in a horizontal or slightly-inclined plane
- 17/34 . . the movement being in a vertical or steeply-inclined plane
- 19/00 Machines or apparatus for drying solid materials or objects not covered by groups F26B 9/00 F26B 17/00**
- 20/00 Combinations of machines or apparatus covered by two or more of groups F26B 9/00 F26B 19/00**

Details of general application

- 21/00 Arrangements for supplying or controlling air or gases for drying solid materials or objects** (air-conditioning or ventilation in general F24F)
- 21/02 . Circulating air or gases in closed cycles, e.g. wholly within the drying enclosure (F26B 21/14 takes precedence)
- 21/04 . . partly outside the drying enclosure
- 21/06 . Controlling, e.g. regulating, parameters of gas supply (F26B 21/14 takes precedence)
- 21/08 . . Humidity
- 21/10 . . Temperature; Pressure
- 21/12 . . Velocity of flow; Quantity of flow
- 21/14 . using gases or vapours other than air or steam

- 23/00 Heating arrangements** (using heated air or gases F26B 21/00)
- 23/02 . using combustion heating (F26B 23/10 takes precedence)
- 23/04 . using electric heating (F26B 23/10 takes precedence)
- 23/06 . . resistance heating
- 23/08 . . inductive heating; capacitative heating; microwave heating
- 23/10 . using tubes or passages containing heated fluids
- 25/00 Details of general application not covered by group F26B 21/00 or F26B 23/00** (loading, conveying, or unloading in general B65G)
- 25/02 . Applications of driving mechanisms, not covered by another subclass
- 25/04 . Agitating, stirring, or scraping devices
- 25/06 . Chambers, containers, or receptacles
- 25/08 . . Parts thereof
- 25/10 . . . Floors, roofs, or bottoms; False bottoms
- 25/12 . . . Walls or sides; Doors
- 25/14 . . Chambers, containers, receptacles of simple construction
- 25/16 . . . mainly closed, e.g. drum
- 25/18 . . . mainly open, e.g. dish, tray, pan
- 25/20 . Rollers (F26B 25/06 takes precedence)
- 25/22 . Controlling the drying process in dependence on liquid content of solid materials or objects