D21D

TREATMENT OF THE MATERIALS BEFORE PASSING TO THE PAPER-MAKING MACHINE

Definition statement

This place covers:

- Methods of beating or refining of fibrous materials and apparatus therefor.
- Methods for purification of the pulp suspension by mechanical means and apparatus therefor.
- Other treatments of the fibrous materials before passing to the paper-making machine.

Relationships with other classification places

Subclass D21B covers the treatment of raw materials, which may be wood, in preparation for paper-making or cellulose production.

Subclass D21C covers further processes resulting in cellulose pulp, usually by chemical means.

Subclass D21D covers further mechanical processing after initial pulp preparation to cellulose and before the resulting materials are passed to the paper-making machines.

Subclass D21F covers methods of producing paper.

Subclass D21H covers pulp compositions.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Separation	B01D
Crushing	B02C
Separating solid materials using liquids	B03B
Centrifuges	B04B
Cyclones	B04C
Separating solids from solids by sieving	B07B
Pre-treatment of moulding material consisting of wood or other lingo-cellulosic or like organic material	B27N 1/00
Mechanical separation of fibres from plant material	D01B 1/00

Special rules of classification

Subgroups and head groups.

If a document concerns embodiments which are covered by several subgroups dependent on a higher hierarchy group, the following rules apply:

- the specific technical information relevant for some of the subgroups is classified in all said subgroups;
- if relevant, the structural association (e.g. the combination) of the elements covered by the subgroups is classified in the head group;

- analogously, if generic technical information common to all of the subgroups is disclosed and only schematic embodiments of the specific subgroup embodiments are represented, the document is classified in the head group only.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

beating	treatment of fibrous suspensions in Hollander type equipment in order to fibrillate, shorten or soften fibers
bed plate	stator of Hollander or Jordan devices
Hollander	traditional equipment for beating fibrous suspensions, being a device using at least one wheel like beating rotor (roll) equipped with beaters revolving in a trough having a beating stator (bed plate), also equipped with beaters, in which trough the suspension is circulated to pass multiple times through the beating zone formed between the rotor and the stator
Jordan	refiner having a frusto-conical rotor revolving inside a complimentary stator
paper stock	a term used to define pulp after mechanical (refining or beating) and/or chemical treatment (sizing, loading, dyeing etc.) in the paper making process, e.g. the pulp ready to make paper
refining	treatment of fibrous suspensions for the same purpose in all other types of equipment

D21D 1/00

Methods of beating or refining; Beaters of the Hollander type (knotter screens D21F)

Definition statement

This place covers:

Methods of beating and refining of pulp fibers in general.

References

Limiting references

This place does not cover:

knotter screens	D21F

D21D 1/004

{Methods of beating or refining including disperging or deflaking}

Definition statement

This place covers:

Disperging (i.e. separating rather small impurities sticking to the surface of a fiber) or deflaking (i.e. separating flakes or flocs formed by fibers into the individual fibers again) methods and equipments for fibrous materials.

D21D 1/006

{Disc mills}

Definition statement

This place covers:

Disc mills only if particularly suitable for disperging or deflaking.

D21D 1/008

{Discs}

Definition statement

This place covers:

Discs for disc mills only if particularly suitable for disperging or deflaking.

D21D 1/02

Methods of beating; Beaters of the Hollander type

Definition statement

This place covers:

Treatment in Hollander equipment, i.e. in a device using at least one wheel like beating rotor (roll) equipped with beating tools (knifes) revolving in a trough having a beating stator (bed plate), also equipped with beating tools (knifes), in which trough the suspension is circulated to pass multiple times through the beating zone formed between the rotor and the stator.

D21D 1/34

Other mills or refiners

Definition statement

This place covers:

Refiners or mills not provided before, for example cylindrical rotors and stators, belt refiners, kneaders causing a refining action, compression refiners, planetary gear like equipment.

References

References out of a residual place

Examples of places in relation to which this place is residual:

Beaters	D21D 1/02
Jordans	D21D 1/22
Ball or rod mills	D21D 1/28
Disc mills	D21D 1/30
Hammer mills	D21D 1/32

D21D 1/40

Washing the fibres

Definition statement

This place covers:

Equipment and methods for washing and dewatering pulp.

References

Limiting references

This place does not cover:

Washing pulp from cooking liquors	D21C 9/02
Recovering fibrous materials from suspensions in the paper machine approach system or white water	D21F 1/66, D21F 1/74, D21F 1/76, D21F 1/78

D21D 5/00

Purification of the pulp suspension by mechanical means; Apparatus therefor (centrifuges, cyclones B04)

Definition statement

This place covers:

Purification methods and equipments for pulp suspensions acting by mechanical means, i.e. straining, screening, centrifugal cleaning, sorting, de-aeration; tanks for storing or agitating pulp.

References

Limiting references

This place does not cover:

centrifuges, cyclones	B04

Informative references

Attention is drawn to the following places, which may be of interest for search:

Degasification of liquids in general	B01D 19/00
Other filters with filtering elements stationary during filtration, e.g. pressure or suction filters in general	B01D 29/00
Sieving, screening, sifting, or sorting solid materials using networks, gratings, grids, or the like, in general	B07B 1/00

D21D 5/005

{Forming fibrous aggregates}

Definition statement

This place covers:

Forming fiber bundles by agitating suspensions; magnetic deinking of suspensions by attaching ink particles in the paper pulp to a magnetic carrier material with the help of an agglomeration agent.

D21D 5/18

with the aid of centrifugal force

Definition statement

This place covers:

Purification, sorting and fractioning methods using centrifugal force.

Equipment for performing the methods.

D21D 5/24

in cyclones

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

cyclones in general	B04C

D21D 5/26

De-aeration of paper stock

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Degassing of liquids in general	B01D 19/00

D21D 99/00

Subject matter not provided for in other groups of this subclass

Definition statement

This place covers:

Subject-matter that fits within the scope of the subclass but is not covered by any of the other groups, such as for example fractioning methods, methods dividing the total suspension stream in portions, not for cleaning purposes, but for obtaining fibre fractions of different properties, e.g. separating longer from shorter fibres, finer from coarser fibres; and treating at least one of these portions differently from remaining portion(s) in subsequent process steps.