

**CPC****COOPERATIVE PATENT CLASSIFICATION****D21F****PAPER-MAKING MACHINES; METHODS OF PRODUCING PAPER THEREON****D21F 1/00****Wet end of machines for making continuous webs of paper**

## D21F 1/0009

. {Regulating the freeness of the pulp}

## D21F 1/0018

. {Devices for dispensing fibres in a fluid}

## D21F 1/0027

. {Screen-cloths}

## D21F 1/0036

.. {Multi-layer screen-cloths}

## D21F 1/0045

... { Triple layer fabrics}

## D21F 1/0054

.. {Seams thereof}

## D21F 1/0063

.. {Perforated sheets}

## D21F 1/0072

.. {Link belts}

## D21F 1/0081

.. {with single endless strands travelling in generally parallel convolutions}

## D21F 1/009

. {Fibre-rearranging devices}

## D21F 1/02

. Head boxes of Fourdrinier machines

## D21F 1/022

.. { Means for injecting material into flow within the headbox}

## D21F 1/024

.. { Details of the feed chamber}

## D21F 1/026

.. { Details of the turbulence section}

## D21F 1/028

.. { Details of the nozzle section}

## D21F 1/04

. Head boxes of cylinder machines

## D21F 1/043

.. {with immersed cylinders}

## D21F 1/046

.. {with non-immersed cylinder}

## D21F 1/06

. Regulating pulp flow

## D21F 1/065

.. {Shock-absorbing devices}

## D21F 1/08

. Regulating consistency

## D21F 1/10

. Wire-cloths ([production of wire-cloths B21F](#))

## D21F 1/105

.. {Multi-layer wire-cloths}

## D21F 1/12

.. Seams thereof

## D21F 1/14

... welded

## D21F 1/16

... sewn

## D21F 1/18

. Shaking apparatus for wire-cloths and associated parts

- D21F 1/20 . . in fourdrinier machines
- D21F 1/22 . . in cylinder machines
- D21F 1/24 . Tilting, raising, or lowering mechanisms for wire-cloths
- D21F 1/26 . . in Fourdrinier machines
- D21F 1/28 . . in cylinder machines
- D21F 1/30 . Protecting wire-cloths from mechanical damage
- D21F 1/32 . Washing wire-cloths or felts
- D21F 1/325 . . {with reciprocating devices}
- D21F 1/34 . Construction or arrangement of spraying pipes
- D21F 1/345 . . {Spraying-pipe cleaners}
- D21F 1/36 . Guiding mechanisms ([suction rolls D21F 3/10](#))
- D21F 1/365 . . {for controlling the lateral position of the screen}
- D21F 1/38 . . Pads
- D21F 1/40 . . Rolls
- D21F 1/42 . . Jets
- D21F 1/44 . Watermarking devices
- D21F 1/46 . . Dandy rolls
- D21F 1/48 . Suction apparatus ([suction rolls D21F 3/10](#))
- D21F 1/483 . . {Drainage foils and bars}
- D21F 1/486 . . . {adjustable}
- D21F 1/50 . . Suction boxes with rolls
- D21F 1/52 . . Suction boxes without rolls
- D21F 1/523 . . . {Covers thereof}
- D21F 1/526 . . . . {consisting of endless moving belts}
- D21F 1/54 . Skimming devices, e.g. froth ledges
- D21F 1/56 . Deckle frame arrangements
- D21F 1/58 . Deckle straps
- D21F 1/60 . Cylinder moulds
- D21F 1/62 . Sand traps
- D21F 1/64 . Magnetic separators
- D21F 1/66 . Pulp catching, de-watering, or recovering; Re-use of pulp-water
- D21F 1/68 . . using hydrocyclones ([hydrocyclones B04C](#))

- D21F 1/70 .. by flotation
- D21F 1/72 .. using funnels
- D21F 1/74 .. using cylinders
- D21F 1/76 ... with suction
- D21F 1/78 ... with pressure
- D21F 1/80 .. using endless screening belts
- D21F 1/82 .. adding fibre agglomeration compositions

## **D21F 2/00 Transferring webs from wet ends to press sections** {(handling webs in general [B65H](#))}

### **D21F 3/00 Press section of machines for making continuous webs of paper**

- D21F 3/02 . Wet presses
- D21F 3/0209 .. {with extended press nip}
- D21F 3/0218 ... { Shoe presses}
- D21F 3/0227 .... { Belts or sleeves therefor}
- D21F 3/0236 ..... { manufacturing methods}
- D21F 3/0245 ..... { Means for fixing the sleeve to the roller end}
- D21F 3/0254 ... { Cluster presses, i.e. presses comprising a press chamber defined by at least three rollers}
- D21F 3/0263 .... { Sealing arrangements therefor}
- D21F 3/0272 .. {in combination with suction or blowing devices}
- D21F 3/0281 .. {in combination with a dryer roll}
- D21F 3/029 .. {using special water-receiving belts}
- D21F 3/04 .. Arrangements thereof
- D21F 3/045 ... { including at least one extended press nip}
- D21F 3/06 .. Means for regulating the pressure
- D21F 3/08 .. Pressure rolls
- D21F 3/083 ... {perforated}
- D21F 3/086 ... {having a grooved surface}
- D21F 3/10 .. Suction rolls, e.g. couch rolls
- D21F 3/105 ... {Covers thereof}

### **D21F 5/00 Dryer section of machines for making continuous webs of paper**

- D21F 5/001 . {Drying webs by radiant heating}
- D21F 5/002 .. {from infra-red-emitting elements}
- D21F 5/003 .. {Shutter means}
- D21F 5/004 . {Drying webs by contact with heated surfaces or materials}
- D21F 5/005 .. {in a fluid bed}

- D21F 5/006 . {Drying webs by using sonic vibrations}
- D21F 5/007 . {Drying webs by contact with sorbent bodies}
- D21F 5/008 . {Drying webs by direct contact with gas flames}
- D21F 5/009 . {Drying webs by centrifugal treatment}
- D21F 5/02 . Drying on cylinders
  - D21F 5/021 .. {Construction of the cylinders}
  - D21F 5/022 .. {Heating the cylinders}
    - D21F 5/024 ... {using electrical means}
    - D21F 5/025 ... {using combustion gases}
    - D21F 5/027 ... {using a heat-transfer fluid between the heating means and the cylinder shell}
    - D21F 5/028 ... {using steam}
  - D21F 5/04 .. on two or more drying cylinders
    - D21F 5/042 ... {in combination with suction or blowing devices}
      - D21F 5/044 .... {using air hoods over the cylinders}
      - D21F 5/046 .... {using pocket ventilation systems}
    - D21F 5/048 ... {in combination with other heating means}
  - D21F 5/06 .. Regulating temperature
  - D21F 5/08 .. Arrangement of steam points in the cylinders
  - D21F 5/10 .. Removing condensate from the interior of the cylinders
- D21F 5/12 . Festoon drying
- D21F 5/14 . Drying webs by applying vacuum
  - D21F 5/143 .. {through perforated cylinders}
  - D21F 5/146 .. {Vacuum seals}
- D21F 5/16 . Drying webs by electrical heating
  - D21F 5/162 .. {Resistance heating}
  - D21F 5/165 .. {Inductive heating; Capacitive heating}
  - D21F 5/167 .. {Microwave heating}
- D21F 5/18 . Drying webs by hot air
  - D21F 5/181 .. { on Yankee cylinder}
  - D21F 5/182 .. {through perforated cylinders}
    - D21F 5/184 ... {Surfaces thereof}
  - D21F 5/185 .. {Supporting webs in hot air dryers}
    - D21F 5/187 ... {by air jets}
    - D21F 5/188 .... {Blowing devices}

D21F 5/20 . Waste heat recovery

**D21F 7/00 Other details of machines for making continuous webs of paper**

D21F 7/001 . {Wire-changing arrangements}

D21F 7/003 . {Indicating or regulating the moisture content of the layer}

D21F 7/005 . {Wire-tensioning devices}

D21F 7/006 . {Cutting the edges of the paper-web}

D21F 7/008 . {Steam showers}

D21F 7/02 . Mechanical driving arrangements

D21F 7/04 . Paper-break control devices

D21F 7/06 . Indicating or regulating the thickness of the layer; Signal devices

D21F 7/08 . Felts

D21F 7/083 . . {Multi-layer felts}

D21F 7/086 . . {Substantially impermeable for transferring fibrous webs}

D21F 7/10 . . Seams thereof

D21F 7/12 . . Drying

**D21F 9/00 Complete machines for making continuous webs of paper**

D21F 9/003 . {of the twin-wire type}

D21F 9/006 . . {paper or board consisting of two or more layers}

D21F 9/02 . of the Fourdrinier type

D21F 9/04 . of the cylinder type

D21F 9/043 . . {with immersed cylinder}

D21F 9/046 . . {with non-immersed cylinder}

**D21F 11/00 Processes for making continuous lengths of paper, or of cardboard, or of wet web for fibre board production, on paper-making machines**

D21F 11/002 . {by using a foamed suspension}

D21F 11/004 . {by modification of the viscosity of the suspension}

D21F 11/006 . {Making patterned paper}

- D21F 11/008 . {Making apertured paper}
- D21F 11/02 . of the Fourdrinier type
- D21F 11/04 . . paper or board consisting on two or more layers
- D21F 11/06 . of the cylinder type
- D21F 11/08 . . paper or board consisting of two or more layers
- D21F 11/10 . Making imitation mould-made paper
- D21F 11/12 . Making corrugated paper or board
- D21F 11/14 . Making cellulose wadding, filter or blotting paper
- D21F 11/145 . . { including a through-drying process}
- D21F 11/16 . Making paper strips for spinning or twisting
- D21F 13/00** **Making discontinuous sheets of paper, pulpboard or cardboard, or of wet web, for fibreboard production** (making discontinuous sheets of board in moulds [D21J](#); drying paper, pulpboard, or cardboard, in discontinuous sheet form [F26B](#))
- D21F 13/02 . Making hand-made paper
- D21F 13/04 . on cylinder board machines
- D21F 13/06 . . Format rolls
- D21F 13/08 . . . Automatic cut-off rolls
- D21F 13/10 . using board presses
- D21F 13/12 . . Platen presses