

**CPC****COOPERATIVE PATENT CLASSIFICATION****D21F****PAPER-MAKING MACHINES; METHODS OF PRODUCING PAPER THEREON****Guidance heading:****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