

**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