

**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 <a href="#">D21F 3/10</a> )
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 <a href="#">D21F 3/10</a> )
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 <a href="#">B04C</a> )
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
<b>D21F 2/00</b>	<b>Transferring webs from wet ends to press sections</b> {(handling webs in general <a href="#">B65H</a> )}
<b>D21F 3/00</b>	<b>Press section of machines for making continuous webs of paper</b>
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}

<b>D21F 11/00</b>	<b>Processes for making continuous lengths of paper, or of cardboard, or of wet web for fibre board production, on paper-making machines</b>
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
<b>D21F 13/00</b>	<b>Making discontinuous sheets of paper, pulpboard or cardboard, or of wet web, for fibreboard production</b> (making discontinuous sheets of board in moulds <a href="#">D21J</a> ; drying paper, pulpboard, or cardboard, in discontinuous sheet form <a href="#">F26B</a> )
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