

**CPC****COOPERATIVE PATENT CLASSIFICATION****B41J**

**TYPEWRITERS; SELECTIVE PRINTING MECHANISMS, { e.g. INK-JET PRINTERS, THERMAL PRINTERS }, i.e. MECHANISMS PRINTING OTHERWISE THAN FROM A FORME; CORRECTION OF TYPOGRAPHICAL ERRORS** (composing [B41B](#) ; printing on special surfaces [B41F](#) ; laundry marking [B41K](#) ; erasers, rubbers or erasing devices [B43L 19/00](#); fluid media for correction of typographical errors by coating [C09D 10/00](#); recording the results of measuring [G01](#) ; recognition or presentation of data, marking record carriers in digital fashion, e.g. by punching, [G06K](#) ; franking or ticket-printing and issuing apparatus [G07B](#) ; electric keyboard switches, in general [H01H 13/70](#), [H03K 17/94](#); coding in connection with keyboards or like devices, in general [H03M 11/00](#); receivers or transmitters for transmission of digital information [H04L](#) ; transmission or reproduction of documents, or the like, e.g. facsimile transmission, [H04N 1/00](#); printing mechanisms specially adapted for apparatus, e.g. cash registers, weighing machines, producing records of their own performance, see the relevant subclasses)

**NOTE**

This subclass covers:

- manually controlled power-operated apparatus or apparatus of this type with additional control by input of recorded information, e.g. on punched cards or tapes;
- the "print-out" features of apparatus controlled by record carriers or electric signals in so far as these are of general interest, e.g. impression, inking, line-spacing mechanisms, printing heads.

This subclass does not cover:

- electrical features of apparatus controlled by record carriers or electric signals and of interest apart from the "print-out" features of said apparatus;
- apparatus controlled by record carriers or electric signals, as a whole.

In this subclass, the following term is used with the meaning indicated:

- "paper" covers also similar flexible copy material;
- "printing material" covers both paper and temporary record carriers from which records are transferred to a paper, but does not cover printing masters, e.g. formes.

**Guidance heading:** Kinds of typewriters or of selective printing mechanisms

**B41J 1/00**

**Typewriters or selective printing mechanisms characterised by the mounting, arrangement, or disposition of the types or dies** (non-selective embossing [B44B 5/00](#))

**B41J 1/02**

- . with separate or detached types or dies

- B41J 1/04 . with types or dies carried upon levers or radial arms, e.g. manually operated  
([B41J 1/16 takes precedence](#))
- B41J 1/06 . . on power-operated levers or arms
- B41J 1/08 . with types or dies carried on sliding bars or rods
- B41J 1/10 . . on end surfaces thereof
- B41J 1/12 . . on side surfaces thereof, e.g. fixed thereto
- B41J 1/14 . . . the types or dies being movable relative to the bars or rods ([mounted on flexible bars or rods B41J 1/16](#))
- B41J 1/16 . with types or dies arranged in stationary or sliding cases or frames or upon flexible strips, plates, bars or rods
- B41J 1/18 . with types or dies strung on wires or rods
- B41J 1/20 . with types or dies mounted on endless bands or the like
- B41J 1/22 . with types or dies mounted on carriers rotatable for selection
- B41J 1/24 . . the plane of the type or die face being perpendicular to the axis of rotation  
([B41J 1/60 takes precedence](#))
- B41J 1/243 . . . {Mounting or fixing the carriers }
- B41J 1/246 . . . {Cartridges for the carriers }
- B41J 1/26 . . . Carriers moving for impression ([B41J 1/27 takes precedence](#))
- B41J 1/27 . . . Carriers moving during impression
- B41J 1/28 . . . Carriers stationary for impression, e.g. with the types or dies not moving relative to the carriers
- B41J 1/30 . . . . with the types or dies moving relative to the carriers or mounted on flexible carriers
- B41J 1/32 . . the plane of the type or die face being parallel to the axis of rotation, e.g. with type on the periphery or cylindrical carriers ([B41J 1/60 takes precedence](#))
- B41J 1/34 . . . Carriers rotating during impression
- B41J 1/36 . . . Carriers sliding for impression, e.g. manually operated
- B41J 1/38 . . . . power operated
- B41J 1/40 . . . Carriers swinging for impression
- B41J 1/42 . . . . about an axis parallel to the axis of rotation of the carrier
- B41J 1/44 . . . Carriers stationary for impression
- B41J 1/46 . . . . Types or dies fixed on wheel, drum, cylinder, or like carriers
- B41J 1/48 . . . . . with a plurality of carriers, one for each character space
- B41J 1/50 . . . . . with one or more carriers travelling across copy material in letter-space direction
- B41J 1/52 . . . . . with copy material moving in the letter-space direction, and the carrier mounting being fixed relative to the machine
- B41J 1/54 . . . . Types or dies movable on wheel, drum, cylinder or like carriers
- B41J 1/56 . . . . Types or dies on shuttles or like loose carriers
- B41J 1/58 . . . . Types or dies upon arcuate bars
- B41J 1/60 . with types or dies on spherical, truncated-spherical, or like surfaces

**B41J 2/00**

**Typewriters or selective printing mechanisms characterised by the printing or marking process for which they are designed** (mounting, arrangement, or disposition of types or dies [B41J 1/00](#); marking methods [B41M 5/00](#); structure or manufacture of heads, e.g. inductive, for recording by magnetisation or demagnetisation of a record carrier [G11B 5/127](#); heads for reproducing capacitive information [G11B 9/07](#))

**NOTE**

This group covers devices reproducing only a discrete number of tones, whereas group [H04N 1/00](#) covers devices used for the reproduction of documents or the like, which devices are capable of reproducing continuous tone value scales.

In this group, the following expressions are used with the meanings indicated:

- "ink jet" involves the projection of ink on to the printing material, e.g. paper, through a nozzle as a stream of droplets or particles of colouring matter
- "continuous ink jet" means a jet of ink transformed into a continuous stream of droplets or particles of colouring matter after having left the nozzle
- "ink spray" means a spray of ink transported by a stream of charged particles or air on to the printing material

**B41J 2/005**

- . characterised by bringing liquid or particles selectively into contact with a printing material (printing by selective application of impact or pressure on a printing or impression-transfer material [B41J 2/22](#))

**B41J 2/0057**

- .. {where an intermediate transfer member receives the ink before transferring it on the printing material }

**B41J 2/01**

- .. Ink jet

**B41J 2/015**

- ... characterised by the jet generation process ([B41J 2/215](#) takes precedence)

**B41J 2/02**

- .... generating a continuous ink jet

**B41J 2/025**

- ..... by vibration

**B41J 2/03**

- ..... by pressure

**B41J 2/035**

- ..... by electric or magnetic field

**B41J 2/04**

- .... generating single droplets or particles on demand

**B41J 2/045**

- ..... by pressure, e.g. electromechanical transducers

**B41J 2/04501**

- ..... { Control methods or devices therefor, e.g. driver circuits, control circuits }

**B41J 2/04503**

- ..... { aiming at compensating carriage speed }

**B41J 2/04505**

- ..... { aiming at correcting alignment }

**B41J 2/04506**

- ..... { aiming at correcting manufacturing tolerances }

**B41J 2/04508**

- ..... { aiming at correcting other parameters }

**B41J 2/0451**

- ..... { for detecting failure, e.g. clogging, malfunctioning actuator }

**B41J 2/04511**

- ..... { for electrostatic discharge protection }

**B41J 2/04513**

- ..... { for increasing lifetime }

**B41J 2/04515**

- ..... { preventing overheating }

**B41J 2/04516**

- ..... { preventing formation of satellite drops }

B41J 2/04518	.....	{ reducing costs }
B41J 2/0452	.....	{ reducing demand in current or voltage }
B41J 2/04521	.....	{ reducing number of signal lines needed }
B41J 2/04523	.....	{ reducing size of the apparatus }
B41J 2/04525	.....	{ reducing occurrence of cross talk }
B41J 2/04526	.....	{ controlling trajectory }
B41J 2/04528	.....	{ aiming at warming up the head }
B41J 2/0453	.....	{ controlling a head having a dummy chamber }
B41J 2/04531	.....	{ controlling a head having a heater in the manifold }
B41J 2/04533	.....	{ controlling a head having several actuators per chamber }
B41J 2/04535	.....	{ involving calculation of drop size, weight or volume }
B41J 2/04536	.....	{ using history data }
B41J 2/04538	.....	{ involving calculation of heater resistance }
B41J 2/0454	.....	{ involving calculation of temperature }
B41J 2/04541	.....	{ Specific driving circuit }
B41J 2/04543	.....	{ Block driving }
B41J 2/04545	.....	{ Dynamic block driving }
B41J 2/04546	.....	{ Multiplexing }
B41J 2/04548	.....	{ Details of power line section of control circuit }
B41J 2/0455	.....	{ Details of switching sections of circuit, e.g. transistors }
B41J 2/04551	.....	{ using several operating modes }
B41J 2/04553	.....	{ detecting ambient temperature }
B41J 2/04555	.....	{ detecting current }
B41J 2/04556	.....	{ detecting distance to paper }
B41J 2/04558	.....	{ detecting presence or properties of a dot on paper }
B41J 2/0456	.....	{ detecting drop size, volume or weight }
B41J 2/04561	.....	{ detecting presence or properties of a drop in flight }
B41J 2/04563	.....	{ detecting head temperature; Ink temperature }
B41J 2/04565	.....	{ detecting heater resistance }
B41J 2/04566	.....	{ detecting humidity }
B41J 2/04568	.....	{ Control according to number of actuators used simultaneously }
B41J 2/0457	.....	{ Power supply level being detected or varied }
B41J 2/04571	.....	{ detecting viscosity }
B41J 2/04573	.....	{ Timing; Delays }
B41J 2/04575	.....	{ controlling heads of acoustic type }
B41J 2/04576	.....	{ controlling heads of electrostatic type }
B41J 2/04578	.....	{ controlling heads based on electrostatically-actuated membranes }
B41J 2/0458	.....	{ controlling heads based on heating elements forming bubbles }
B41J 2/04581	.....	{ controlling heads based on piezoelectric elements }
B41J 2/04583	.....	{ controlling heads based on discharge by lowering the surface tension of meniscus }
B41J 2/04585	.....	{ controlling heads based on thermal bent actuators }

B41J 2/04586	.....	{ controlling heads of a type not covered by groups <a href="#">B41J 2/04575</a> - <a href="#">B41J 2/04585</a> , or of an undefined type }
B41J 2/04588	.....	{ using a specific waveform }
B41J 2/0459	.....	{ Height of the driving signal being adjusted }
B41J 2/04591	.....	{ Width of the driving signal being adjusted }
B41J 2/04593	.....	{ Dot-size modulation by changing the size of the drop }
B41J 2/04595	.....	{ Dot-size modulation by changing the number of drops per dot }
B41J 2/04596	.....	{ Non-ejecting pulses }
B41J 2/04598	.....	{ Pre-pulse }
B41J 2/05	.....	produced by the application of heat
B41J 2/055	.....	Devices for absorbing or preventing back-pressure
B41J 2/06	.....	by electric or magnetic field
B41J 2/065	.....	involving the preliminary making of ink protuberances
B41J 2/07	...	characterised by jet control ( <a href="#">B41J 2/205</a> takes precedence)
B41J 2/072	....	{by thermal compensation }
B41J 2/075	....	for many-valued deflection
B41J 2/08	.....	charge-control type
B41J 2/085	.....	Charge means, e.g. electrodes
B41J 2/09	.....	Deflection means
B41J 2/095	.....	electric field-control type
B41J 2/10	.....	magnetic field-control type
B41J 2/105	....	for binary-valued deflection
B41J 2/11	....	for ink spray
B41J 2/115	....	synchronising the droplet separation and charging time
B41J 2/12	....	testing or correcting charge or deflection
B41J 2/125	....	Sensors, e.g. deflection sensors
B41J 2/13	....	for inclination of printed pattern
B41J 2/135	...	Nozzles
B41J 2/14	....	Structure thereof {only for on-demand ink jet heads }
B41J 2/14008	.....	{Structure of acoustic ink jet print heads }
B41J 2/14016	.....	{Structure of bubble jet print heads }
B41J 2/14024	.....	{Assembling head parts }
B41J 2/14032	.....	{Structure of the pressure chamber }
B41J 2/1404	.....	{Geometrical characteristics }
B41J 2/14048	.....	{Movable member in the chamber }
B41J 2/14056	.....	{Plural heating elements per ink chamber }
B41J 2/14064	.....	{Heater chamber separated from ink chamber by a membrane }
B41J 2/14072	.....	{Electrical connections, e.g. details on electrodes, connecting the chip to the outside... }
B41J 2/1408	.....	{Structure dealing with thermal variations, e.g. cooling device, thermal coefficients of materials }
B41J 2/14088	.....	{Structure of heating means }
B41J 2/14096	.....	{Current flowing through the ink }

B41J 2/14104	.....	{Laser or electron beam heating the ink }
B41J 2/14112	.....	{Resistive element }
B41J 2/1412	.....	{Shape }
B41J 2/14129	.....	{Layer structure }
B41J 2/14137	.....	{Resistor surrounding the nozzle opening }
B41J 2/14145	.....	{Structure of the manifold }
B41J 2/14153	.....	{Structures including a sensor }
B41J 2/14161	.....	{Structure having belt or drum with holes filled with ink }
B41J 2/14201	.....	{Structure of print heads with piezoelectric elements }
B41J 2/14209	.....	{of finger type, chamber walls consisting integrally of piezoelectric material }
B41J 2/14233	.....	{of film type, deformed by bending and disposed on a diaphragm }
B41J 2/14274	.....	{of stacked structure type, deformed by compression/extension and disposed on a diaphragm }
B41J 2/14282	.....	{of cantilever type }
B41J 2/1429	.....	{of tubular type }
B41J 2/14298	.....	{of disc type }
B41J 2/14314	.....	{Structure of ink jet print heads with electrostatically actuated membrane }
B41J 2/1433	.....	{Structure of nozzle plates }
B41J 2/14427	.....	{ Structure of ink jet print heads with thermal bend detached actuators }
B41J 2/14451	.....	{Structure of ink jet print heads discharging by lowering surface tension of meniscus }
B41J 2/145	....	Arrangement thereof
B41J 2/15	.....	for serial printing
B41J 2/155	.....	for line printing
B41J 2/16	....	Production of nozzles
B41J 2/1601	.....	{Production of bubble jet print heads ( <a href="#">B41J 2/1606</a> , <a href="#">B41J 2/162</a> take precedence) }
B41J 2/1603	.....	{of the front shooter type }
B41J 2/1604	.....	{of the edge shooter type }
B41J 2/1606	.....	{Coating the nozzle area or the ink chamber }
B41J 2/1607	.....	{Production of print heads with piezoelectric elements ( <a href="#">B41J 2/1606</a> , <a href="#">B41J 2/162</a> take precedence) }
B41J 2/1609	.....	{of finger type, chamber walls consisting integrally of piezoelectric material }
B41J 2/161	.....	{of film type, deformed by bending and disposed on a diaphragm }
B41J 2/1612	.....	{of stacked structure type, deformed by compression/extension and disposed on a diaphragm }
B41J 2/1614	.....	{of cantilever type }
B41J 2/1615	.....	{of tubular type }
B41J 2/1617	.....	{of disc type }
B41J 2/1618	.....	{Fixing the piezoelectric elements }
B41J 2/162	.....	{Manufacturing of the nozzle plates }
B41J 2/1621	.....	{manufacturing processes }

B41J 2/1623	.....	{bonding and adhesion }
B41J 2/1625	.....	{electroforming }
B41J 2/1626	.....	{etching }
B41J 2/1628	.....	{dry etching }
B41J 2/1629	.....	{wet etching }
B41J 2/1631	.....	{photolithography }
B41J 2/1632	.....	{machining }
B41J 2/1634	.....	{laser machining }
B41J 2/1635	.....	{dividing the wafer into individual chips }
B41J 2/1637	.....	{molding }
B41J 2/1639	.....	{sacrificial molding }
B41J 2/164	.....	{thin film formation }
B41J 2/1642	.....	{thin film formation by CVD (chemical vapor deposition) }
B41J 2/1643	.....	{thin film formation by plating }
B41J 2/1645	.....	{thin film formation by spincoating }
B41J 2/1646	.....	{thin film formation by sputtering }
B41J 2/1648	.....	{ Production of print heads with thermal bend detached actuators }
B41J 2/165	....	Preventing {or detecting } of nozzle clogging, e.g. cleaning, capping or moistening for nozzles
B41J 2/16505	.....	{Caps, spittoons or covers for cleaning or preventing drying out }
B41J 2/16508	.....	{connected with the printer frame }
B41J 2/16511	.....	{Constructions for cap positioning ( <a href="#">B41J 2/16547</a> takes precedence) }
B41J 2/16517	.....	{ Cleaning of print head nozzles ( <a href="#">B41J 2/16505</a> , <a href="#">B41J 2/1707</a> , <a href="#">B41J 2/1714</a> take precedence) }
B41J 2/1652	.....	{ by driving a fluid through the nozzles to the outside thereof, e.g. by applying pressure to the inside or vacuum at the outside of the print head }
B41J 2/16523	.....	{Waste ink collection from caps or spittoons, e.g. by suction }
B41J 2/16526	.....	{by applying pressure only }
B41J 2/16532	.....	{by applying vacuum only }
B41J 2/16535	.....	{using wiping constructions ( <a href="#">B41J 2/16552</a> takes precedence) }
B41J 2/16538	.....	{with brushes or wiper blades perpendicular to the nozzle plate }
B41J 2/16541	.....	{ Means to remove deposits from wipers or scrapers }
B41J 2/16544	.....	{Constructions for the positioning of wipers }
B41J 2/16547	.....	{the wipers and caps or spittoons being on the same movable support }
B41J 2/16552	.....	{using cleaning fluids }
B41J 2/16579	.....	{Detection means therefor, e.g. for nozzle clogging }
B41J 2/16585	.....	{ for paper-width or non-reciprocating print heads } M1104]
B41J 2/16588	.....	{ Print heads movable towards the cleaning unit }
B41J 2/17	...	characterised by ink handling
B41J 2/1707	....	{Conditioning of the inside of ink supply circuits, e.g. flushing during start-up or shut-down }



B41J 2/1714	....	{Conditioning of the outside of ink supply systems, e.g. inkjet collector cleaning, ink mist removal ( <a href="#">B41J 2/08</a> , <a href="#">B41J 2/16517</a> , <a href="#">B41J 2/18</a> take precedence) }
B41J 2/1721	....	{Collecting waste ink; Collectors therefor }
B41J 2/175	....	Ink supply systems; {Circuit parts therefor }
B41J 2/17503	.....	{Ink cartridges }
B41J 2/17506	.....	{Refilling of the cartridge }
B41J 2/17509	.....	{Whilst mounted in the printer }
B41J 2/17513	.....	{Inner structure }
B41J 2/1752	.....	{Mounting within the printer }
B41J 2/17523	.....	{Ink connection }
B41J 2/17526	.....	{Electrical contacts to the cartridge }
B41J 2/1753	.....	{Details of contacts on the cartridge, e.g. protection of contacts }
B41J 2/17533	.....	{ Storage or packaging of ink cartridges } [0612]
B41J 2/17536	.....	{Protection of cartridges or parts thereof, e.g. tape }
B41J 2/1754	.....	{with means attached to the cartridge, e.g. protective cap }
B41J 2/17543	.....	{Cartridge presence detection or type identification }
B41J 2/17546	.....	{electronically }
B41J 2/1755	.....	{mechanically }
B41J 2/17553	.....	{Outer structure }
B41J 2/17556	.....	{Means for regulating the pressure in the cartridge }
B41J 2/17559	.....	{Cartridge manufacturing }
B41J 2/17563	.....	{Ink filters }
B41J 2/17566	.....	{Ink level or ink residue control }
B41J 2/17593	.....	{Supplying ink in a solid state }
B41J 2/17596	.....	{Ink pumps, ink valves }
B41J 2/18	....	Ink recirculation systems
B41J 2/185	.....	Ink-collectors; Ink-catchers
B41J 2/19	....	for removing air bubbles
B41J 2/195	....	for monitoring ink quality
B41J 2/20	....	for preventing or detecting contamination of compounds
B41J 2/205	...	for printing a discrete number of tones ( <a href="#">B41J 2/21</a> takes precedence)
B41J 2/2052	....	{by dot superpositioning, e.g. multipass doubling }
B41J 2/2054	....	{by the variation of dot disposition or characteristics, e.g. dot number density, dot shape }
B41J 2/2056	....	{by ink density change }
B41J 2/21	...	for multi-colour printing
B41J 2/2103	....	{Features not dealing with the colouring process per se, e.g. construction of printers or heads, driving circuit adaptations }
B41J 2/2107	....	{characterised by the ink properties }
B41J 2/211	.....	{Mixing of inks, solvent or air prior to paper contact }
B41J 2/2114	.....	{Ejecting transparent or white coloured liquids, e.g. processing liquids ( <a href="#">B41J 2/211</a> takes precedence) }
B41J 2/2117	.....	{ Ejecting white liquids }



B41J 2/2121	....	{characterised by dot size, e.g. combinations of printed dots of different diameter }
B41J 2/2125	.....	{by means of nozzle diameter selection }
B41J 2/2128	.....	{by means of energy modulation }
B41J 2/2132	....	{ Print quality control characterised by dot disposition, e.g. for reducing white stripes or banding (methods for local corrections by dot omission, image edge enhancement, or multi-pass mask selection <a href="#">G06K 15/102</a> ; colour conversion <a href="#">H04N 1/40</a> ) }
B41J 2/2135	.....	{ Alignment of dots (adjustments by bodily moving print heads or carriages <a href="#">B41J 25/001</a> ) }
B41J 2/2139	.....	{ Compensation for malfunctioning nozzles creating dot place or dot size errors }
B41J 2/2142	.....	{ Detection of malfunctioning nozzles (for cleaning purposes <a href="#">B41J 2/16579</a> ; jet deflection sensors <a href="#">B41J 2/125</a> ) }
B41J 2/2146	.....	{ for line print heads }
B41J 2/215	..	by passing a medium, e.g. consisting of an air or particle stream, through an ink mist
B41J 2/22	.	characterised by selective application of impact or pressure on a printing material or impression-transfer material
B41J 2/225	..	ballistic, e.g. using solid balls or pellets
B41J 2/23	..	using print wires
B41J 2/235	...	Print head assemblies
B41J 2/24	....	serial printer type ( <a href="#">B41J 2/25</a> , <a href="#">B41J 2/265</a> take precedence)
B41J 2/245	....	line printer type ( <a href="#">B41J 2/25</a> , <a href="#">B41J 2/265</a> take precedence)
B41J 2/25	....	Print wires
B41J 2/255	.....	Arrangement of the print ends of the wires
B41J 2/26	.....	Connection of print wire and actuator
B41J 2/265	....	Guides for print wires
B41J 2/27	...	Actuators for print wires
B41J 2/275	....	of clapper type ( <a href="#">B41J 2/28</a> takes precedence)
B41J 2/28	....	of spring charge type, i.e. with mechanical power under electro-magnetic control
B41J 2/285	....	of plunger type
B41J 2/29	....	of moving-coil type
B41J 2/295	....	using piezo-electric elements
B41J 2/30	...	Control circuits for actuators
B41J 2/305	...	Ink supply apparatus ( <a href="#">ink ribbons</a> , <a href="#">ink-ribbon mechanisms</a> <a href="#">B41J 31/00</a> to <a href="#">B41J 35/00</a> )
B41J 2/31	..	using a print element with projections on its surface impacted or impressed by hammers
B41J 2/315	.	characterised by selective application of heat to a heat sensitive printing or impression-transfer material ( <a href="#">B41J 2/385</a> , <a href="#">B41J 2/435</a> take precedence)
B41J 2/32	..	using thermal heads
B41J 2/325	...	by selective transfer of ink from ink carrier, e.g. from ink ribbon or sheet
B41J 2/33	....	from ink roller

B41J 2/335	...	Structure of thermal heads
B41J 2/33505	....	{ Constructional details }
B41J 2/3351	.....	{ Electrode layers }
B41J 2/33515	.....	{ Heater layers }
B41J 2/3352	.....	{ Integrated circuits }
B41J 2/33525	.....	{ Passivation layers }
B41J 2/3353	.....	{ Protective layers }
B41J 2/33535	.....	{ Substrates }
B41J 2/3354	....	{ characterised by geometry }
B41J 2/33545	....	{ characterised by dimensions }
B41J 2/3355	....	{ characterised by materials }
B41J 2/33555	....	{ characterised by type }
B41J 2/3356	.....	{ Corner type resistors }
B41J 2/33565	.....	{ Edge type resistors }
B41J 2/3357	.....	{ Surface type resistors }
B41J 2/33575	....	{ Processes for assembling process heads }
B41J 2/3358	....	{ Cooling arrangements }
B41J 2/33585	....	{ Hollow parts under the heater }
B41J 2/3359	....	{ Manufacturing processes }
B41J 2/33595	....	{ Conductors through the layered structure }
B41J 2/34	....	comprising semiconductors
B41J 2/345	...	characterised by the arrangement of resistors or conductors
B41J 2/35	...	providing current or voltage to the thermal head
B41J 2/355	....	Control circuits for heating-element selection
B41J 2/3551	.....	{ Block driving }
B41J 2/3553	.....	{ Heater resistance determination }
B41J 2/3555	.....	{ Historical control }
B41J 2/3556	.....	{ Preheating pulses }
B41J 2/3558	.....	{ Voltage control or determination }
B41J 2/36	.....	Print density control
B41J 2/362	.....	{ Correcting density variation }
B41J 2/365	.....	by compensation for variation in temperature
B41J 2/37	.....	by compensation for variation in current
B41J 2/375	...	Protection arrangements against overheating
B41J 2/38	..	Preheating, i.e. heating to a temperature insufficient to cause printing
B41J 2/385	.	characterised by selective supply of electric current or selective application of magnetism to a printing or impression-transfer material ( <a href="#">B41J 2/005 takes precedence</a> ; <a href="#">electrography</a> , <a href="#">magnetography</a> <a href="#">G03G</a> )
B41J 2/3855	..	{ Electrographic print heads using processes not otherwise provided for, e.g. electrolysis }
B41J 2/39	..	using multi-stylus heads
B41J 2/395	...	Structure of multi-stylus heads

- B41J 2/40 . . . providing current or voltage to the multi-stylus head
- B41J 2/405 . . . . Selection of the stylus or auxiliary electrode to be supplied ([electronic switching circuits in general H03K 17/00](#))
- B41J 2/41 . . for electrostatic printing ([B41J 2/39 takes precedence](#))
- B41J 2/415 . . . by passing charged particles through a hole or a slit
- B41J 2/4155 . . . . { [for direct electrostatic printing \[DEP\]](#) }
- B41J 2/42 . . for heating selectively
- B41J 2/425 . . for removing surface layer selectively from electro-sensitive material, e.g. metal coated paper
- B41J 2/43 . . for magnetic printing
- B41J 2/435 . characterised by selective application of radiation to a printing material or impression-transfer material ([optical elements, systems, or apparatus G02B](#) ; [modulation or deflection of light G02F](#) ; [electrophotography G03G](#) )
- B41J 2/44 . . using single radiation source { [per colour](#) }, e.g. lighting beams or shutter arrangements ( { [B41J 2/465](#), [B41J 2/47](#) }, [B41J 2/475 take precedence](#) )
- B41J 2/442 . . . { [using lasers](#) (ablative marking methods and sheet materials for use therein [B41M 5/24](#); working material by laser beam in general [B23K 26/00](#)) }
- B41J 2/445 . . . using liquid crystals
- B41J 2/447 . . using arrays of radiation sources ([B41J 2/475 takes precedence](#))
- B41J 2/4473 . . . { [using liquid crystal \[LC\]](#) arrays }
- B41J 2/4476 . . . { [using cathode ray or electron beam tubes](#) }
- B41J 2/45 . . . using light-emitting diode { [\[LED\]](#) or laser } arrays
- B41J 2/451 . . . . { [Special optical means therefor, e.g. lenses, mirrors, focusing means](#) }
- B41J 2/455 . . . using laser arrays, { [the laser array being smaller than the medium to be recorded](#) }
- B41J 2/46 . . . characterised by using glass fibres
- B41J 2/465 . . using masks, e.g. light-switching masks ([photographic composing B41B](#) )
- B41J 2/4655 . . . { [using character templates](#) }
- B41J 2/47 . . using the combination of scanning and modulation of light
- B41J 2/471 . . . { [using dot sequential main scanning by means of a light deflector, e.g. a rotating polygonal mirror](#) }
- B41J 2/473 . . . . { [using multiple light beams, wavelengths or colours](#) }
- B41J 2/475 . . for heating selectively { [by radiation or ultrasonic waves](#) }
- B41J 2/4753 . . . { [using thermosensitive substrates, e.g. paper](#) }
- B41J 2/48 . . . melting ink on a film or melting ink granules
- B41J 2/485 . characterised by the process of building-up characters { [or image elements](#) } applicable to two or more kinds of printing or marking processes
- B41J 2/49 . . by writing
- B41J 2/495 . . by selective printing from a rotating helical member
- B41J 2/50 . . by the selective combination of two or more non-identical printing elements
- B41J 2/505 . . from an assembly of identical printing elements { ([printers with two or more sets of printing elements B41J 3/54](#); Arrangements for producing a permanent visual presentation of the digital output data using matrix printers, e.g. individual print element control for printing letters [G06K 15/10](#)) }

- B41J 2/5052 . . . { with special adaptations characterised by the ink properties ([B41J 2/2107](#) takes precedence) }
- B41J 2/5054 . . . { with special adaptations characterised by dot size ([B41J 2/2121](#) takes precedence) }
- B41J 2/5056 . . . { using dot arrays providing selective dot disposition modes, e.g. different dot densities for high speed and high quality printing, array line selections for multi-pass printing, or dot shifts for character inclination ([B41J 2/2132](#) takes precedence; providing dot disposition modes by bodily changing the angle of a print head [B41J 25/003](#)) }
- B41J 2/5058 . . . . { locally, i.e. for single dots or for small areas of a character (methods for insertion or deletion of dots, or for character edge smoothing [G06K 15/102](#)) }
- B41J 2/51 . . . serial printer type
- B41J 2/512 . . . . { Adjustment of the dot disposition by adjustment of the arrangement of the dot printing elements of a print head, e.g. nozzles, needles }

### **WARNING**

This group is no longer used for the classification of new documents as from January 1, 2010. The backlog of this group is being continuously reclassified to [B41J 25/001](#) and subgroups

- B41J 2/515 . . . line printer type
- B41J 2/52 . . . Arrangement for printing a discrete number of tones, not covered by group [B41J 2/205](#), e.g. applicable to two or more kinds of printing or marking process ([B41J 2/525](#) takes precedence; for photomechanical production [G03F 5/00](#))
- B41J 2/525 . . . Arrangement for multi-colour printing, not covered by group [B41J 2/21](#), e.g. applicable to two or more kinds of printing or marking process (for photomechanical production [G03F 3/00](#))
- B41J 3/00** **Typewriters or selective printing or marking mechanisms, {e.g. ink-jet printers, thermal printers } characterised by the purpose for which they are constructed** (cryptographic typewriters [G09C 3/00](#))
- B41J 3/01 . . . for special character, e.g. for Chinese characters or bar codes
- B41J 3/24 . . . for perforating or stencil cutting using special types or dies
- B41J 3/26 . . . for stenographic writing
- B41J 3/28 . . . for printing downwardly on flat surfaces, e.g. of books, drawings, boxes, { envelopes, e.g. flat-bed ink-jet printers ([B41J 3/36](#) , [B41J 3/407](#), [B41J 3/4071](#), [B41J 3/4073](#), [B41J 3/4075](#), [B41J 3/4076](#), [B41J 3/4078](#) take precedence; flat page-size platens [B41J 11/06](#); conveyor belts [B41J 13/12](#); drawing instruments [B43L 13/00](#), automatic draughting machines [B43L 13/022](#)) }
- B41J 3/283 . . . {on bank books or the like }
- B41J 3/286 . . . {on boxes }
- B41J 3/30 . . . for printing with large type, e.g. on bulletins, tickets
- B41J 3/32 . . . for printing in Braille or with keyboards specially adapted for use by blind or disabled persons

- B41J 3/34 . for printing musical scores
- B41J 3/36 . for portability, { i.e. hand-held printers or laptop printers (B41J 3/4075 takes precedence; printers with reduced dimensions B41J 29/023; stackable printers B41J 29/026) }
- B41J 3/365 .. {Toy typewriters (toy imitations of typewriters A63H 33/3077) }
- B41J 3/37 .. Foldable typewriters
- B41J 3/38 . for embossing, e.g. for making matrices for stereotypes { (Surface shaping, e.g. embossing B29C 59/00; mechanical deformation of paper or cardboard without removing material B31F 1/00; machines or apparatus for embossing decorations or marks B44B 5/00) }
- B41J 3/382 .. {of tapes, e.g. tape cartridges }
- B41J 3/385 .. {of plates, e.g. metal plates, plastic cards }
- B41J 3/387 ... {with automatic plate transport systems, e.g. for credit cards }
- B41J 3/39 .. hand-held (manually-controlled or manually-operable label dispensers having printing equipment B65C 11/02)
- B41J 3/407 . for marking on special material (printing on special surfaces B41F 7/00; { apparatus or processes for manufacturing printed circuits by printing or dispensing a conductive paste or ink H05K 3/1241 } )
- B41J 3/4071 .. {Printing on disk-shaped media, e.g. CDs }
- B41J 3/4073 .. { Printing on three-dimensional objects not being in sheet or web form, e.g. spherical or cubic objects (B41J 3/283, B41J 3/286 take precedence; building up a 3D object using individual droplets from jetting heads B29C 67/0059) }
- B41J 3/4075 .. {Tape printers; Label printers (tape cartridges B41J 15/044) }
- B41J 3/4076 .. { printing on rewritable, bistable "electronic paper" by a focused electric or magnetic field (displays in which the positions of movable elements are controlled by the application of an electric field G09F 9/372, of a magnetic field G09F 9/375) }
- B41J 3/4078 .. { Printing on textile (ink-jet dyeing or printing processes for textile D06P 5/30; conversion of colour signals for textile printing H04N 1/54) }
- B41J 3/413 .. for metal
- B41J 3/42 . Two or more complete typewriters coupled for simultaneous operation
- B41J 3/44 . Typewriters or selective printing mechanisms having dual functions or combined with, or coupled to, apparatus performing other functions (printing mechanisms coupled to typographical composing machines B41B 27/41)
- B41J 3/445 .. { Printers integrated in other types of apparatus, e.g. printers integrated in cameras }
- B41J 3/46 .. Printing mechanisms combined with apparatus providing a visual indication
- B41J 3/50 .. Mechanisms producing characters by printing and also producing a record by other means { , e.g. printer combined with RFID writer } (punching mechanisms G06K )
- B41J 3/51 ... the printed and recorded information being identical; using type elements with code-generating means (G06K 1/12 takes precedence)
- B41J 3/54 . with two or more sets of type or printing elements (B41J 3/60 takes precedence)
- B41J 3/543 .. { with multiple inkjet print heads (B41J 2/17503, B41J 2/2103 take precedence) }
- B41J 3/546 .. { Combination of different types, e.g. using a thermal transfer head and an inkjet print head }

- B41J 3/60 . for printing on both faces of the printing material
- B41J 3/62 . for printing on two or more separate sheets or strips of printing material {being conveyed simultaneously to or through the printing zone } (B41J 3/54 takes precedence {; [B41J 15/18](#) , [B41J 15/20](#) , [B41J 15/22](#) and [B41J 15/24](#) take precedence })

**Guidance heading: Common details or accessories**

**B41J 5/00 Devices or arrangements for controlling character selection ( {interpreting [G06K 3/00](#); } methods or arrangements for sensing record carriers [G06K 7/00](#) )**

- B41J 5/02 . Character or syllable selected by setting an index
- B41J 5/04 . . Single-character selection
- B41J 5/06 . . Multiple-character selection
- B41J 5/08 . Character or syllable selected by means of keys or keyboards of the typewriter type

**WARNING**

Groups [B41J 5/08](#) to [B41J 5/28](#) are no longer used for the classification of new documents. See [G06F 3/00](#)

- B41J 5/10 . . Arrangements of keyboards, {e.g. key button disposition }
- B41J 5/102 . . . {Keyboard overlays (for computer use [G06F 3/023](#) ) }
- B41J 5/105 . . . {Constructional details of keyboard frames, e.g. adjusting or fixation means }
- B41J 5/107 . . . {for special purposes, e.g. Braille, Chinese, multi-language options }
- B41J 5/12 . . Construction of key buttons
- B41J 5/14 . . Construction of key levers
- B41J 5/16 . . Mounting or connecting key buttons on or to key levers
- B41J 5/18 . . Locks
- B41J 5/20 . . . for subsidiary keys, e.g. for shift keys
- B41J 5/22 . . . Interlocks between keys, e.g. without detent arrangements
- B41J 5/24 . . . with detent arrangements
- B41J 5/26 . . Regulating touch, key dip or stroke, or the like
- B41J 5/28 . . Multiple-action keys, e.g. keys depressed by two or more amounts or movable in two or more directions to effect different functions or selections
- B41J 5/30 . Character or syllable selection controlled by recorded information
- B41J 5/31 . . characterised by form of recorded information
- B41J 5/32 . . . by printed, embossed, or photographic records, e.g. cards, sheets
- B41J 5/34 . . . . by strip or tapes
- B41J 5/36 . . . by punched records, e.g. cards, sheets
- B41J 5/38 . . . . by strips or tapes
- B41J 5/40 . . . by magnetic or electrostatic records, e.g. cards, sheets
- B41J 5/42 . . . . by strips or tapes

- B41J 5/44 . . characterised by storage of recorded information
- B41J 5/46 . . . on internal storages
- B41J 5/48 . . . on external storages
- B41J 5/50 . . . . on a single storage
- B41J 5/51 . . . . on more than one separate storage, e.g. on additional correction strips or tapes
- B41J 5/52 . . characterised by the provision of additional devices for producing a punched or like record, e.g. simultaneously
  
- B41J 7/00** **Type-selecting or type-actuating mechanisms** ([index setting B41J 5/02](#))
  
- B41J 7/005 . {Type-selecting actions or mechanisms by unusual means, e.g. for use by physically disabled persons (control means for physically disabled persons in general [A61F 4/00](#)) }
  
- B41J 7/02 . Type-lever actuating mechanisms
- B41J 7/04 . . Levers mounted on fixed pivots
- B41J 7/06 . . . and connected to transmission members, e.g. toothed gearing
- B41J 7/08 . . . . with pin-and-slot or like loose connections; Cam-slot members
- B41J 7/10 . . . . Chain, belt, flexible cable, or like members
- B41J 7/12 . . U-shaped type-lever on two pivots
- B41J 7/14 . . Single key-and-type lever
- B41J 7/16 . . Type-head pivoted to or rotating on lever
- B41J 7/18 . . Levers having moving or variable fulcra to alter the mechanical advantage during the stroke
- B41J 7/20 . . Levers having moving pivots fixed relative to the lever; type- bars each pivoted on two links
- B41J 7/22 . . Type-baskets; Bearings or hangers for type levers
- B41J 7/24 . . Construction of type-levers ([U-shaped levers B41J 7/12](#))
- B41J 7/26 . . Special means, e.g. repulsers, for ensuring return of type- levers
- B41J 7/28 . . Key lever and type member returned independently to rest position
- B41J 7/30 . . Preventing rebound or clash of levers or type members
  
- B41J 7/32 . Type-face selected by operation of sliding members
  
- B41J 7/34 . Type-face selected by operation of rotary members
  
- B41J 7/36 . Selecting arrangements applied to type-carriers rotating during impression
- B41J 7/38 . . Type movable on carrier for selection
- B41J 7/40 . . Type movable on carrier for impression
- B41J 7/42 . . Timed impression, e.g. without impact
- B41J 7/44 . . . with impact
- B41J 7/46 . . Rolling contact during impression
  
- B41J 7/48 . Type carrier arrested in selected position by electromagnetic means
  
- B41J 7/50 . Type-face selected by combinations of two movements of type carrier



- B41J 7/52 .. by combined rotary and sliding movement
- B41J 7/54 . Selecting arrangements including combinations, permutation, summation, or aggregation means
- B41J 7/56 .. Summation devices for mechanical movements
- B41J 7/58 ... Wedges
- B41J 7/60 ... Levers
- B41J 7/62 ... Gearing
- B41J 7/64 ... Pulley and strand mechanism
- B41J 7/66 .. Movable members, e.g. pins, displaceable according to a code
- B41J 7/68 .. with means for selectively closing an electric circuit for type presentation
- B41J 7/90 . Syllable, line, or like type selection
- B41J 7/92 . Impact adjustment; Means to give uniformity of impression ([B41J 9/46](#), [B41J 9/48](#) take precedence)
- B41J 7/94 .. Character-by-character adjustment
- B41J 7/96 . Means checking correctness of setting
- B41J 9/00 Hammer-impression mechanisms**
- B41J 9/02 . Hammers; Arrangements thereof
- B41J 9/04 .. of single hammers, e.g. travelling along printing line
- B41J 9/06 ... of stationary hammers, e.g. engaging a single type-carrier
- B41J 9/08 .... engaging more than one type-carrier
- B41J 9/10 .. of more than one hammer, e.g. one for each character position
- B41J 9/12 ... each operating in more than one character position
- B41J 9/127 .. Mounting of hammers
- B41J 9/133 .. Construction of hammer body or tip
- B41J 9/14 . Means for selecting or suppressing individual hammers
- B41J 9/16 . Means for cocking or resetting hammers
- B41J 9/18 .. Cams
- B41J 9/20 .. Springs
- B41J 9/22 .. Fluid-pressure means
- B41J 9/24 .. Electromagnetic means
- B41J 9/26 . Means for operating hammers to effect impression
- B41J 9/28 .. Cams
- B41J 9/30 .. Springs
- B41J 9/32 .. arranged to be clutched to snatch roll
- B41J 9/34 .. Fluid-pressure means
- B41J 9/36 .. in which mechanical power is applied under electromagnetic control

- B41J 9/38 . . Electromagnetic means
- B41J 9/40 . . including an electro-adhesive clutch
- B41J 9/42 . with anti-rebound arrangements
- B41J 9/44 . Control for hammer-impression mechanisms
- B41J 9/46 . . for deciding or adjusting hammer-firing time
- B41J 9/48 . . for deciding or adjusting hammer-drive energy
- B41J 9/50 . . for compensating for the variations of printer drive conditions, e.g. for compensating for the variation of temperature or current supply
- B41J 9/52 . . for checking the operation of print hammers
- B41J 9/54 . . . for checking the breakage of print hammers
- B41J 11/00** **Devices or arrangements** {of selective printing mechanisms, e.g. ink-jet printers, thermal printers, } **for supporting or handling copy material in sheet or web form** ( {printing on both faces [B41J 3/60](#); } specially adapted for supporting or handling copy material in short lengths [B41J 13/00](#); in continuous form [B41J 15/00](#); holders for text to be copied [B41J 29/00](#) {; handling sheets or webs in general [B65H](#) ; apparatus for electrographic processes using a charge pattern, e.g. copying machines, [G03G 15/00](#) } )
- B41J 11/0005 . {Curl smoothing, i.e. smoothing down corrugated printing material, e.g. by pressing means acting on wrinkled printing material (means for tensioning webs in general [B41J 15/16](#); tensioning webs by using redirecting rollers or redirecting nonrevolving guides [B41J 15/165](#); smoothers in general [B65H 5/36](#) or [B65H 29/52](#); taking out curl from webs [B65H 23/34](#); decurling sheets [G03G 15/6576](#) ) }
- B41J 11/001 . {Handling wide copy materials, (wide cut sheets [B41J 13/0072](#) ) }
- B41J 11/0015 . {for treating before, during or after printing or for uniform coating or laminating the copy material before or after printing (selective coating [B41J 2/2114](#); application of ink fixing material by inkjet printers [B41M 5/0011](#); after-treatment of prints relating to the nature of material [B41M 7/00](#); after-treatment of prints using protective coatings or layers [B41M 7/0027](#) ) }
- B41J 11/002 . . {Heating or irradiating, e.g. by UV or IR, or drying of copy material }
- B41J 11/0025 . {Handling copy materials differing in width }
- B41J 11/003 . . {Paper-size detection, i.e. automatic detection of the length and/or width of copy material }
- B41J 11/0035 . {Handling copy materials differing in thickness ([B41J 11/20](#) and [B41J 25/308](#) take precedence) }
- B41J 11/004 . { Platenless printing, i.e. conveying the printing material freely, without support on its back, through the printing zone opposite to the print head }
- B41J 11/0045 . {Guides for printing material (curl smoothing [B41J 11/0005](#); platens [B41J 11/02](#), [B41J 11/06](#); guiding webs [B41J 15/046](#) ) }
- B41J 11/005 . . {Guides in the printing zone, e.g. guides for preventing contact of conveyed sheets with printhead (guides in the printing section for copy material in short lengths [B41J 13/14](#) ) }
- B41J 11/0055 . . {Lateral guides, e.g. guides for preventing skewed conveyance of printing material }

- B41J 11/006 . {Means for preventing paper jams or for facilitating their removal }
- B41J 11/0065 . {Means for printing without leaving a margin on at least one edge of the copy material, e.g. edge-to-edge printing }
- B41J 11/007 . {Conveyor belts or like feeding devices (conveyor belts specially adapted for handling sheets [B41J 13/08](#); conveyor belts specially adapted for handling copy material in continuous form [B41J 15/048](#); conveyor belts in general [B65G 15/00](#); separating articles from piles using belts [B65H 3/04](#); feeding articles by belts [B65H 5/02](#)) }
- B41J 11/0075 . {Low-paper indication, i.e. indicating the state when copy material has been used up nearly or completely }
- B41J 11/008 . {Controlling printhead for accurately positioning print image on printing material, e.g. with the intention to control the width of margins }
- B41J 11/0085 . {Using suction for maintaining printing material flat (on rotatable drums [B41J 13/226](#)) }
- B41J 11/009 . { Detecting type of paper, e.g. by automatic reading of a code that is printed on a paper package or on a paper roll or by sensing the grade of translucency of the paper (selecting type of paper [B41J 11/485](#); investigating or analysing materials by the use of optical means [G01N 21/00](#); investigating moving sheets [G01N 21/86](#)) }
- B41J 11/0095 . {Detecting means for copy material, e.g. for detecting or sensing presence of copy material or its leading or trailing end }
- B41J 11/02 . Platens
- B41J 11/04 . . Roller platens
- B41J 11/053 . . . with sound-deadening devices ([structure of surface B41J 11/057](#))
- B41J 11/057 . . . Structure of the surface
- B41J 11/06 . . Flat page-size platens {or smaller flat platens having a greater size than line-size platens ([B41J 11/0085](#) takes precedence; flat-bed ink-jet printers [B41J 3/28](#)) }
- B41J 11/08 . . Bar or like line-size platens
- B41J 11/10 . . Anvil or like character-size platens
- B41J 11/13 . . Backings or blankets ([for roller platens B41J 11/057](#))
- B41J 11/14 . . Platen-shift mechanisms; Driving gear therefor { ([B41J 11/20](#) takes precedence) }
- B41J 11/16 . . with balancing means
- B41J 11/18 . Platen-impression arrangements
- B41J 11/20 . Platen adjustments for varying the strength of impression, for a varying number of papers, for wear or for alignment, { or for print gap adjustment (adjustments by moving the print head [B41J 25/308](#), [B41J 25/312](#)) }
- B41J 11/22 . Paper carriage guides or races { ([printhead carriage guides B41J 19/00](#)) }
- B41J 11/24 . Detents, brakes, or couplings for feed rollers or platens
- B41J 11/26 . Pin feeds
- B41J 11/27 . . on or within the platen-rollers

- B41J 11/28 . . Pin wheels
- B41J 11/30 . . Pin traction elements other than wheels, e.g. pins on endless bands
- B41J 11/32 . . Adjustment of pin wheels or traction elements, e.g. laterally
- B41J 11/34 . . Guides coacting with pin feeds
  
- B41J 11/36 . Blanking or long feeds; Feeding to a particular line, e.g. by rotation of platen or feed roller
- B41J 11/38 . . Manually-operated feeding devices
- B41J 11/40 . . specially adapted for printing musical scores
- B41J 11/42 . . Controlling {printing material conveyance for accurate alignment of the printing material with the printhead; Print registering (controlling printhead [B41J 11/008](#); control of the transport of cut sheets [B41J 13/0009](#)) }
- B41J 11/425 . . . { for a variable printing material feed amount }
- B41J 11/44 . . . by devices, e.g. programme tape or contact wheel, moved in correspondence with movement of paper-feeding devices, e.g. platen rotation
- B41J 11/46 . . . by marks or formations on the paper being fed
  
- B41J 11/48 . Apparatus for condensed record, tally strip, or like work using two or more papers, or sets of papers, {e.g. devices for switching over from handling of copy material in sheet form to handling of copy material in continuous form and vice versa or point-of-sale printers comprising means for printing on continuous copy material, e.g. journal for tills, and on single sheets, e.g. cheques or receipts ([B41J 15/042](#) takes precedence; simultaneous conveyance of sheets or strips [B41J 3/62](#)) }
- B41J 11/485 . . {Means for selecting a type of copy material amongst different types of copy material in the printing apparatus (detecting type of paper [B41J 11/009](#)) }
- B41J 11/50 . . in which two or more papers or sets are separately fed in the same direction towards the printing position { ([B41J 15/18](#), [B41J 15/20](#), [B41J 15/22](#) and [B41J 15/24](#) take precedence) }
- B41J 11/51 . . . with different feed rates { ([B41J 15/18](#), [B41J 15/20](#), [B41J 15/22](#) and [B41J 15/24](#) take precedence) }
- B41J 11/52 . . in which one paper or set is moved transversely relative to another
- B41J 11/53 . . . Devices for holding in place one paper or set during replacement of one or more of the auxiliary papers or sets
- B41J 11/54 . . in which one paper or set is fed towards printing position from the front of the apparatus
- B41J 11/55 . . . with means for adjusting a paper or set
  
- B41J 11/56 . specially constructed to facilitate storage or transport of typewriter { ([B41J 3/36](#) takes precedence) }
  
- B41J 11/58 . Supply holders for sheets or fan-folded webs, e.g. shelves, tables, scrolls, pile holders { ([B41J 13/10](#), [B41J 13/103](#) and [B41J 13/106](#) take precedence) }
  
- B41J 11/60 . Erasing or correcting tables
  
- B41J 11/62 . Shields or masks
  
- B41J 11/64 . Applications of scales or indicators
  
- B41J 11/66 . Applications of cutting devices { (cutting in general [B26D](#) ) }

- B41J 11/663 . . {Controlling cutting, cutting resulting in special shapes of the cutting line, e.g. controlling cutting positions, e.g. for cutting in the immediate vicinity of a printed image }
- B41J 11/666 . . {Cutting partly, e.g. cutting only the uppermost layer of a multiple-layer printing material }
- B41J 11/68 . . Cutting parallel to the direction of paper feed
- B41J 11/70 . . Cutting perpendicular to the direction of paper feed
- B41J 11/703 . . . {Cutting of tape }
- B41J 11/706 . . . {using a cutting tool mounted on a reciprocating carrier }
  
- B41J 13/00** **Devices or arrangements** {of selective printing mechanisms, e.g. ink-jet printers, thermal printers, } **specially adapted for supporting or handling copy material in short lengths, e.g. sheets** { (handling sheets or webs in general [B65H](#) ; apparatus for electrographic processes using a charge pattern, e.g. copying machines, [G03G 15/00](#)) }
  
- B41J 13/0009 . {control of the transport of the copy material }
- B41J 13/0018 . . {in the sheet input section of automatic paper handling systems (guides therefor [B41J 13/103](#)) }
- B41J 13/0027 . . {in the printing section of automatic paper handling systems (rollers [B41J 13/02](#), guides therefor [B41J 13/14](#)) }
- B41J 13/0036 . . {in the output section of automatic paper handling systems (rollers [B41J 13/02](#), guides [B41J 13/106](#)) }
- B41J 13/0045 . . {concerning sheet refeed sections of automatic paper handling systems, e.g. intermediate stackers, reversing units ([printing on both faces B41J 3/60](#)) }
  
- B41J 13/0054 . {Handling sheets of differing lengths }
  
- B41J 13/0063 . {Handling thick cut sheets larger than credit cards, e.g. greeting cards, postcards, e.g. using means for enabling or facilitating the conveyance of thick sheets ([B41J 11/20](#), [B41J 13/12](#) and [B41J 25/308](#) take precedence) }
  
- B41J 13/0072 . {Handling wide cut sheets, e.g. using means for enabling or facilitating the conveyance of wide sheets }
  
- B41J 13/0081 . {Sheet-storing packages, e.g. for protecting the sheets against ambient influences, e.g. light, humidity, changes in temperature }
  
- B41J 13/009 . {Diverting sheets at a section where at least two sheet conveying paths converge, e.g. by a movable switching guide that blocks access to one conveying path and guides the sheet to another path, e.g. when a sheet conveying direction is reversed after printing on the front of the sheet has been finished and the sheet is guided to a sheet turning path for printing on the back }
  
- B41J 13/02 . Rollers (roller platens [B41J 11/04](#) {; rollers for conveying in general [B65G 39/00](#); separating articles from piles using friction rollers [B65H 3/06](#); feeding articles by rollers [B65H 5/06](#) })
- B41J 13/025 . . {Special roller holding or lifting means, e.g. for temporarily raising one roller of a pair of nipping rollers for inserting printing material }
- B41J 13/03 . . driven, e.g. feed rollers separate from platen
- B41J 13/036 . . co-operating with a roller platen
- B41J 13/042 . . . Front and rear rollers or sets of front or rear rollers each mounted on a separate

- carrier
- B41J 13/048 . . . Front and rear rollers both mounted on a common carrier
- B41J 13/054 . . . . on the paper apron concentric with the roller platen
- B41J 13/076 . . Construction of rollers; Bearings therefor
- B41J 13/08 . {Conveyor } bands or like feeding devices { (B41J 11/007 takes precedence) }
- B41J 13/10 . Sheet holders, retainers, {movable guides }, or stationary guides
- B41J 13/103 . . {for the sheet feeding section }
- B41J 13/106 . . {for the sheet output section }
- B41J 13/12 . . specially adapted for {small } cards, envelopes, or the like {, e.g. credit cards, cut visiting cards (handling thick cut sheets larger than credit cards B41J 13/0063) }
- B41J 13/14 . . Aprons or guides {for the printing section }
- B41J 13/16 . . . movable for insertion or release of sheets
- B41J 13/18 . . . concentric with roller platen
- B41J 13/20 . . Bails
- B41J 13/22 . . Clamps or grippers
- B41J 13/223 . . . {on rotatable drums }
- B41J 13/226 . . . . {using suction }
- B41J 13/24 . . Strips for supporting or holding papers
- B41J 13/26 . Registering devices { (registering in general B65H 9/00) }
- B41J 13/28 . . Front lays, stops, or gauges
- B41J 13/30 . . Side lays or gauges
- B41J 13/32 . . Means for positioning sheets in two directions under one control, e.g. for format control or orthogonal sheet positioning
- B41J 15/00** **Devices or arrangements {of selective printing mechanisms, e.g. ink-jet printers, thermal printers, } specially adapted for supporting or handling copy material in continuous form, e.g. webs { (handling sheets or webs in general B65H ) }**
- B41J 15/005 . {Forming loops or sags in webs, e.g. for slackening a web or for compensating variations of the amount of conveyed web material (by arranging a "dancing roller" in a sag of the web material) }
- B41J 15/02 . Web rolls or spindles; Attaching webs to cores or spindles
- B41J 15/04 . Supporting, feeding, or guiding devices; Mountings for web rolls or spindles
- B41J 15/042 . . {for loading rolled-up continuous copy material into printers, e.g. for replacing a used-up paper roll; Point-of-sale printers with openable casings allowing access to the rolled-up continuous copy material }
- B41J 15/044 . . {Cassettes or cartridges containing continuous copy material, tape, for setting into printing devices }
- B41J 15/046 . . {for the guidance of continuous copy material, e.g. for preventing skewed conveyance of the continuous copy material }
- B41J 15/048 . . {Conveyor belts or like feeding devices (B41J 11/007 takes precedence) }
- B41J 15/06 . . characterised by being applied to printers having stationary carriages

- B41J 15/08 . . characterised by being applied to printers having transversely- moving carriages
- B41J 15/10 . . . and mounted on the carriage
- B41J 15/12 . . . and coupled to the carriage
- B41J 15/14 . . . and detached from the carriage
  
- B41J 15/16 . Means for tensioning or winding the web
- B41J 15/165 . . {for tensioning continuous copy material by use of redirecting rollers or redirecting nonrevolving guides }
  
- B41J 15/18 . Multiple web-feeding apparatus
- B41J 15/20 . . for webs superimposed during printing ([machines for separating superposed webs B65H 41/00](#))
- B41J 15/22 . . for feeding webs in separate paths during printing
- B41J 15/24 . . with means for registering the webs with each other
  
- B41J 17/00** **Mechanisms for manipulating page-width impression-transfer material, e.g. carbon paper (in manifolding devices [B41L](#) )**
  
- B41J 17/02 . Feeding mechanisms
- B41J 17/04 . . Feed dependent on the record-paper feed, e.g. both moved at the same time
- B41J 17/06 . . . "Creep" feed, i.e. impression-transfer material fed slower than the record paper
- B41J 17/07 . . . electromagnetically controlled
- B41J 17/08 . . Feed independent of the record-paper feed
- B41J 17/10 . . . electromagnetically controlled
- B41J 17/12 . . Special adaptations for ensuring maximum life
- B41J 17/14 . . Automatic arrangements for reversing the feed direction
  
- B41J 17/16 . Holders in the machine for sheets of impression transfer material
- B41J 17/18 . . pivotable to and from the platen
- B41J 17/20 . . slidable to and from the platen
  
- B41J 17/22 . Supply arrangements for webs of impression-transfer material
- B41J 17/24 . . Webs supplied from reels or spools attached to the machine
- B41J 17/26 . . Webs supplied from trays or like supports attached to the machines
  
- B41J 17/28 . Arrangements of guides for the impression-transfer material
- B41J 17/30 . Constructions of guides for the impression-transfer material
- B41J 17/32 . Detachable carriers or holders for impression-transfer material mechanism
- B41J 17/34 . Backings for impression-transfer material, e.g. sheets for reducing friction, shields for preventing imprint
- B41J 17/36 . Alarms, indicators, or feed-disabling devices responsive to material breakage or exhaustion
- B41J 17/38 . for dealing with the impression-transfer material after use



- B41J 17/40 . . for retracting sheets for re-use
- B41J 17/42 . . for webs
  
- B41J 19/00** **Character- or line-spacing mechanisms** ( { paper carriage guides [B41J 11/22](#); superimposed movements for serial printing [B41J 25/005](#); } key actions [B41J 25/02](#))
  
- B41J 19/005 . {Cable or belt constructions for driving print, type or paper-carriages, e.g. attachment, tensioning means }
  
- B41J 19/02 . with retarding devices, e.g. brakes
  
- B41J 19/04 . Sound-deadening or shock-absorbing devices or measures therein ([B41J 19/38](#) takes precedence)
  
- B41J 19/06 . . Resilient mounting of mechanism
- B41J 19/08 . . Buffers, springs or like carriage stops
- B41J 19/10 . . Dash-pots
- B41J 19/12 . . Gearing made of special material or specially constructed to reduce sound or shock
  
- B41J 19/14 . with means for effecting line or character spacing in either direction
- B41J 19/142 . . { with a reciprocating print head printing in both directions across the paper width }
- B41J 19/145 . . . {Dot misalignment correction }
- B41J 19/147 . . . {Colour shift prevention }
  
- B41J 19/16 . Special spacing mechanisms for circular, spiral, or diagonal-printing apparatus
  
- B41J 19/18 . Character-spacing or back-spacing mechanisms; Carriage return or release devices therefor
  
- B41J 19/20 . . Positive-feed character-spacing mechanisms ([controlled by escapements B41J 19/52](#))
- B41J 19/202 . . . {Drive control means for carriage movement }
- B41J 19/205 . . . . {Position or speed detectors therefor }
- B41J 19/207 . . . . . {Encoding along a bar }
- B41J 19/22 . . acting by friction or gripping effect
- B41J 19/24 . . Pawl and ratchet
- B41J 19/26 . . . moving a paper or like carriage
- B41J 19/28 . . . moving a paper or like web or strip, e.g. over a stationary support
- B41J 19/30 . . Electromagnetically-operated mechanisms
- B41J 19/305 . . . {Linear drive mechanisms for carriage movement }
- B41J 19/32 . . Differential or variable-spacing arrangements
- B41J 19/34 . . Escapement-feed character-spacing mechanisms
- B41J 19/36 . . Driving mechanism, e.g. springs stressed during carriage return
- B41J 19/38 . . . adapted for silent return
- B41J 19/40 . . Escapements having a single pawl or like detent
- B41J 19/42 . . Escapements having two pawl or like detents
- B41J 19/44 . . . coacting with two toothed members, e.g. racks or wheels

- B41J 19/46 . . . . and mounted on a single rocker
- B41J 19/48 . . . . and mounted on a single slider
- B41J 19/50 . . . Electromagnetically-controlled escapements
- B41J 19/52 . . . Escapements controlling positive-feed mechanism
- B41J 19/54 . . . Construction of universal bars
- B41J 19/56 . . . Escapements controlling web or strip feed
- B41J 19/58 . . . Differential or variable-spacing arrangements
- B41J 19/60 . . Auxiliary feed or adjustment devices
- B41J 19/62 . . . for back spacing
- B41J 19/64 . . . for justifying
- B41J 19/66 . . Carriage-release mechanisms
- B41J 19/68 . . Carriage-return mechanisms, e.g. manually actuated
- B41J 19/70 . . . power driven
- B41J 19/72 . . . . with power stored during character spacing
- B41J 19/74 . . with special means to maintain character-spacing or back- spacing elements in engagement during case-shift or like movement
  
- B41J 19/76 . Line-spacing mechanisms ([special line-feeds](#), e.g. [long feeds 11/36](#))
- B41J 19/78 . . Positive-feed mechanisms
- B41J 19/80 . . . Pawl-and-ratchet mechanisms
- B41J 19/82 . . . . moving a paper or like carriage
- B41J 19/84 . . . . . in the form of a roller rotated for line spacing
- B41J 19/86 . . . . . the pawl being normally in engagement with the ratchet
- B41J 19/88 . . . . moving a type carriage
- B41J 19/90 . . . . moving a paper or like web or strip, e.g. over a stationary support, automatically in response to movements other than carriage return
- B41J 19/92 . . . Electromagnetically-operated mechanisms
- B41J 19/94 . . . automatically operated in response to carriage return
- B41J 19/96 . . . Variable-spacing arrangements
- B41J 19/98 . . Escapement-feed mechanisms
  
- B41J 21/00** **Column, tabular, or like printing arrangements; Means for centralising short lines**  
([carrier-release mechanisms B41J 19/66](#); [key actions B41J 25/18](#))
  
- B41J 21/02 . Stops or stop-racks
- B41J 21/04 . Mechanisms for setting or restoring tabulation stops
- B41J 21/06 . with means for preventing rebound from stops
- B41J 21/08 . Mechanisms for initiating, effecting, skipping, or stopping tabulation movement; Means for centralising short lines
- B41J 21/10 . with central, counter, or equivalent stop projected into path of tabulation stops
- B41J 21/12 . characterised by arrangements of electrical contacts

- B41J 21/14 . characterised by denominational arrangements
- B41J 21/16 . controlled by the sensing of marks or formations on the paper being typed, and undersheet, or the platen
- B41J 21/17 . controlled by stored information
- B41J 21/18 . characterised by application of scales or indicators
- B41J 23/00** **Power drives for actions or mechanisms** ([B41J 9/00](#), { [B41J 19/30B](#) }, take precedence)
- B41J 23/02 . Mechanical power drives
- B41J 23/025 . . {using a single or common power source for two or more functions }
- B41J 23/04 . . with driven mechanism arranged to be clutched to continuously- operating power source
- B41J 23/06 . . . by snatch rolls
- B41J 23/08 . . . by one-revolution or part-revolution clutches
- B41J 23/10 . . . and arrested in selected position
- B41J 23/12 . . Mechanism driven by cams engaging rotating roller
- B41J 23/14 . . Mechanism driven by through an oscillating or reciprocating member
- B41J 23/16 . . Mechanisms driven by a spring tensioned by power means
- B41J 23/18 . . Continuously-cycling drives
- B41J 23/20 . Fluid-pressure power drives
- B41J 23/22 . . for key or like type selection
- B41J 23/24 . . for impression mechanisms
- B41J 23/26 . . for platen or carriage movements, e.g. for line spacing, letter spacing, or carriage return
- B41J 23/28 . . for type-carriage movements
- B41J 23/30 . . for case shift
- B41J 23/32 . Electromagnetic power drives, e.g. applied to key levers
- B41J 23/34 . . applied to elements other than key levers
- B41J 23/36 . . . and acting on type members
- B41J 23/38 . . . and acting on aligning or case-shift mechanisms
- B41J 25/00** **Actions or mechanisms not otherwise provided for**
- B41J 25/001 . { Mechanisms for bodily moving print heads or carriages parallel to the paper surface (character- or line-spacing mechanisms [B41J 19/00](#)) }

**WARNING**

This group and subgroups [B41J 25/003](#) and [B41J 25/005](#) are not complete pending a reorganisation. See also [B41J 2/51B](#)

- B41J 25/003      ..      { for changing the angle between a print element array axis and the printing line, e.g. for dot density changes (dot arrays providing selective dot disposition modes [B41J 2/5056](#)) }
- B41J 25/005      ..      { for serial printing movements superimposed to character- or line-spacing movements }
- B41J 25/006      ..      { for oscillating, e.g. page-width print heads provided with counter-balancing means or shock absorbers }
  
- B41J 25/02      .      Key actions for specified purposes
- B41J 25/04      ..      Back spacing
- B41J 25/06      ..      Carriage return
- B41J 25/08      ..      Case shift
- B41J 25/10      ..      Ink-ribbon adjustment
- B41J 25/12      ..      Character spacing
- B41J 25/14      ..      Line spacing
- B41J 25/16      ..      Line spacing and carriage return by a single key
- B41J 25/18      ..      Tabulating
  
- B41J 25/20      .      Auxiliary type mechanisms for printing distinguishing marks, e.g. for accenting, using dead or half-dead key arrangements, for printing marks in telegraph printers to indicate that machine is receiving
  
- B41J 25/22      .      for aligning characters for impression (in machines using index setting [B41J 5/02](#))
  
- B41J 25/24      .      Case-shift mechanisms ([B41J 11/14](#) takes precedence; key actions [B41J 25/08](#)) ; Fount-change arrangements
  
- B41J 25/304      .      Bodily-movable mechanisms for print heads or carriages movable towards or from paper surface (type carriers { rotatable for selection and } sliding for impression [B41J 1/36](#); type carriers { rotatable for selection and } swinging for impression [B41J 1/40](#); { line print heads movable towards a cleaning unit [B41J 2/16588](#) })
- B41J 25/308      ..      with print gap adjustment mechanisms { (by platen movement [B41J 11/20](#)) }
- B41J 25/3082      ...      { with print gap adjustment means on the print head carriage, e.g. for rotation around a guide bar or using a rotatable eccentric bearing }
- B41J 25/3084      ....      { by means of a spacer contacting the matter to be printed }
- B41J 25/3086      ...      { with print gap adjustment means between the print head and its carriage }
- B41J 25/3088      ...      { with print gap adjustment means on the printer frame, e.g. for rotation of an eccentric carriage guide shaft }
- B41J 25/312      ..      with print pressure adjustment mechanisms, e.g. pressure-on-the paper mechanisms
- B41J 25/316      ..      with tilting motion mechanisms relative to paper surface
  
- B41J 25/32      .      Impression mechanisms in which a roller co-operates with stationary type-faces
  
- B41J 25/34      .      Bodily-changeable print heads or carriages ([B41J 1/20](#), [B41J 1/22](#), [B41J 1/60](#) take precedence)
  
- B41J 27/00      Inking apparatus**
  
- B41J 27/02      .      with ink applied by pads or rotary discs

- B41J 27/04 . . Pads or discs; Ink supply arrangements therefor
- B41J 27/06 . . Arrangements to ensure maximum life of pads or discs
- B41J 27/08 . . Arrangements for multicolour work
- B41J 27/10 . with ink applied by rollers; Ink supply arrangements therefor
- B41J 27/12 . . Rollers
- B41J 27/14 . . Arrangements for multicolour work
- B41J 27/16 . with ink deposited electrostatically or electromagnetically, e.g. powdered ink
- B41J 27/18 . . with liquid ink deposited
- B41J 27/20 . with ink supplied by capillary action, e.g. through porous type members, through porous platens
- B41J 27/22 . with inking discs or sectors
- B41J 29/00 Details of, or accessories for, typewriters or selective printing mechanisms not otherwise provided for**
- B41J 29/02 . Framework
- B41J 29/023 . . {with reduced dimensions (for portability [B41J 3/36](#)) }
- B41J 29/026 . . {Stackable }
- B41J 29/04 . Means for attaching machines to baseboards
- B41J 29/06 . Special supports, platforms or trolleys for supporting machines on tables
- B41J 29/08 . Sound-deadening, or shock-absorbing stands, supports, cases or pads separate from machines
- B41J 29/10 . Sound-deadening devices embodied in machines ([B41J 19/04](#) takes precedence)
- B41J 29/12 . Guards, shields or dust excluders
- B41J 29/13 . . Cases or covers
- B41J 29/14 . Attachments operated by the leg, e.g. the foot, the knee
- B41J 29/15 . Script supports connected to the typewriter or printer ([tables, desks, office furniture in general A47B](#) )
- B41J 29/16 . Auxiliary receptacles for articles, e.g. erasers, pencils
- B41J 29/17 . Cleaning arrangements
- B41J 29/18 . Mechanisms for rendering the print visible to the operator ([ink-ribbon shifts B41J 35/20](#))
- B41J 29/19 . . with reflectors or illuminating devices
- B41J 29/20 . Arrangements of counting devices

- B41J 29/22 . . Line counters
- B41J 29/24 . . Word counters
- B41J 29/26 . Devices, non-fluid media or methods for cancelling, correcting errors, underscoring or ruling
- B41J 29/28 . . Writing or like instruments in holders or guides
- B41J 29/30 . . Wheels
- B41J 29/32 . . Type members
- B41J 29/34 . . . repeatedly actuated
- B41J 29/36 . . for cancelling or correcting errors by overprinting ([B41J 31/00 takes precedence](#))
- B41J 29/367 . . . sheet media carrying a pigmented transferable correction layer
- B41J 29/373 . . . sheet media bearing an adhesive layer effective to lift off wrongly typed characters
- B41J 29/377 . Cooling or ventilating arrangements
- B41J 29/38 . Drives, motors, controls or automatic cut-off devices for the entire printing mechanism
- B41J 29/387 . . Automatic cut-off devices
- B41J 29/393 . . Devices for controlling or analysing the entire machine; { [Controlling or analysing mechanical parameters involving printing of test patterns](#) }
- B41J 29/40 . Means for printing fixed, i.e. unchanging, matter in addition to selectable matter
- B41J 29/42 . Scales and indicators, e.g. for determining side margins
- B41J 29/44 . . for determining top and bottom margins or indicating exhaust of paper
- B41J 29/46 . Applications of alarms, e.g. responsive to approach of end of line ([responsive to transfer-material breakage or exhaustion B41J 17/36, B41J 35/36](#))
- B41J 29/48 . . responsive to breakage or exhaustion of paper or approach of bottom of paper
- B41J 29/50 . Side-stop mechanism
- B41J 29/52 . Top-and-bottom stop mechanisms
- B41J 29/54 . Locking devices applied to printing mechanisms
- B41J 29/56 . . and manually actuated
- B41J 29/58 . . and automatically actuated
- B41J 29/60 . . . in response to failure of power supply
- B41J 29/62 . . . by the absence of paper to lock hammer mechanism
- B41J 29/64 . . . by a function of the printer to lock the keyboard
- B41J 29/66 . . . . Locking devices actuated when platen reaches the end of a line
- B41J 29/68 . . . by completion of a page or predetermined number of lines or exhaustion of paper to lock the keyboard
- B41J 29/70 . . . Interlocks between any two-carriage-moving mechanisms, e.g. character-space, back space, tabulation, carriage return or carriage- release mechanisms

**Guidance heading:** Ink ribbons; Ink-ribbon mechanisms

- B41J 31/00**      **Ink ribbons** (spools for ink ribbons [B65H 75/00](#); coated or treated non-woven strips or sheets used as ink ribbons [D21H](#) ) ; **Testing or renovating ink ribbons**
- [B41J 31/02](#)      . Ink ribbons characterised by the material from which they are woven
- [B41J 31/04](#)      . . woven from synthetic material
- [B41J 31/05](#)      . Ink ribbons having coatings other than impression-material coatings
- [B41J 31/06](#)      . . the coatings being directly on the base material, i.e. below impression transfer material; Ink ribbons having base material impregnated with material other than impression material
- [B41J 31/08](#)      . . the coatings being superimposed on impression-transfer material
- [B41J 31/09](#)      . Ink ribbons characterised by areas carrying media for obliteration or removal of typing errors
- [B41J 31/10](#)      . Ink ribbons having arrangements to facilitate threading through a machine
- [B41J 31/12](#)      . Ink ribbons having arrangements to prevent undesired contact between the impression-transfer material and machine parts or other articles
- [B41J 31/14](#)      . Renovating or testing ink ribbons
- [B41J 31/16](#)      . . while fitted in the machine using the ink ribbons
- B41J 32/00**      **Ink-ribbon cartridges**
- [B41J 32/02](#)      . for endless ribbons
- B41J 33/00**      **Apparatus or arrangements for feeding ink ribbons or like character-size impression-transfer material**
- [B41J 33/003](#)      . {**Ribbon spools** (spools in general [B65H 75/00](#)) }
- [B41J 33/006](#)      . . {**Arrangements to attach the ribbon to the spool** }
- [B41J 33/02](#)      . Ribbon arrangements
- [B41J 33/04](#)      . . mounted on moving carriages
- [B41J 33/06](#)      . . Ribbons associated, but not moving, with typewriter platens, e.g. extending transversely to the length of the platen
- [B41J 33/08](#)      . . . and extending parallel to the length of the platen
- [B41J 33/10](#)      . . Arrangements of endless ribbons
- [B41J 33/12](#)      . . Ribbons carried by coaxially-mounted spools
- [B41J 33/14](#)      . Ribbon-feed devices or mechanisms
- [B41J 33/16](#)      . . with drive applied to spool or spool spindle
- [B41J 33/18](#)      . . . by ratchet mechanism ([B41J 33/30](#) takes precedence)
- [B41J 33/20](#)      . . . by friction
- [B41J 33/22](#)      . . . by gears or pulleys



- B41J 33/24 . . with drive applied directly to ribbon
- B41J 33/26 . . . by rollers engaging the ribbon
- B41J 33/28 . . . by mechanism pulling or gripping the ribbon
- B41J 33/30 . . Escapement mechanisms
- B41J 33/32 . . Electromagnetic devices
- B41J 33/34 . . driven by motors indepently of the machine as a whole
- B41J 33/36 . . with means for adjusting feeding rate
- B41J 33/38 . . Slow, e.g. "creep", feed mechanisms
  - B41J 33/382 . . . the ribbon being fed only during carriage return
  - B41J 33/384 . . . . and attached to the carriage during writing
  - B41J 33/386 . . . the ribbon being fed only by operation of the line spacing mechanism
  - B41J 33/388 . . . the ribbon being fed only when type impression takes place
- B41J 33/40 . . with arrangements for reversing the feed direction
  - B41J 33/42 . . . manually
  - B41J 33/44 . . . automatically
    - B41J 33/46 . . . . and characterised by its application to mechanism in which two spools are driven by pawl-and-rachet mechanism
      - B41J 33/48 . . . . . comprising two pawls and ratchets, one for each spool
      - B41J 33/50 . . . . . comprising a single pawl or integral double-tooth pawl selectively engageable with two ratchets, one for each spool
    - B41J 33/51 . . . . and characterised by the use of particular reversing control means
      - B41J 33/512 . . . . . using a pivoted reversing-feeler engaging the external periphery of the wound ribbon
      - B41J 33/514 . . . . . using a pivoted reversing-feeler engaging the interior of the wound ribbon
      - B41J 33/516 . . . . . using a reversing-feeler responsive to the tension of the ribbon
      - B41J 33/518 . . . . . the reversing-feeler engaging buttons or the like secured to the ribbon near its end
- B41J 33/52 . . Braking devices therefor
- B41J 33/54 . . for ensuring maximum life of the ribbon ([B41J 33/38](#) takes precedence; by [adjustment of vibrator mechanisms B41J 35/14](#))
- B41J 33/56 . . . Ribbon adjusted transversely
- B41J 33/58 . . . Ribbon fed angularly
- B41J 33/60 . . responsive to telegraph code or other extraneous signals

**B41J 35/00 Other apparatus or arrangements associated with, or incorporated in, ink-ribbon mechanisms**

- B41J 35/02 . Frames or holders for unwound short lengths of ink ribbons
- B41J 35/03 . . the holder being movable to inoperative position, e.g. by swinging upwardly
- B41J 35/04 . Ink-ribbon guides
  - B41J 35/06 . . stationary
  - B41J 35/08 . . with tensioning arrangements
  - B41J 35/10 . . Vibrator mechanisms; Driving gear therefor

- B41J 35/12 . . . adjustable, e.g. for case shift ([key actions B41J 25/02](#))
- B41J 35/14 . . . . for multicolour work; for ensuring maximum life of ink ribbon; for rendering ink-ribbon inoperative
- B41J 35/16 . Multicolour arrangements ([B41J 35/10 takes precedence](#))
- B41J 35/18 . . Colour change effected automatically
- B41J 35/20 . Ink-ribbon shifts, e.g. for exposing print, for case-shift adjustment, for rendering ink ribbon inoperative
- B41J 35/22 . Mechanisms permitting the selective use of a plurality of ink ribbons
- B41J 35/23 . . with two or more ribbon guides
- B41J 35/24 . Mechanisms specially adapted for feeding impression-transfer materials of foil form
- B41J 35/26 . Ink-ribbon shields or backings
- B41J 35/28 . Detachable carriers or holders for ink-ribbon mechanisms
- B41J 35/30 . Manifolding or like arrangements
- B41J 35/32 . . for producing a plurality of copies along the printing line by a single ink ribbon
- B41J 35/34 . . using a plurality or separate ink ribbons, e.g. including one hectographic ink ribbon
- B41J 35/35 . . using unwound short lengths or ink ribbons
- B41J 35/36 . Alarms, indicators, or feed disabling devices responsive to ink ribbon breakage or exhaustion
- B41J 35/38 . Feeding the ink ribbon to waste after use

#### Guidance heading:

**B41J 2002/00** **Typewriters or selective printing mechanisms characterised by the printing or marking process for which they are designed** ([mounting, arrangement, or disposition of types or dies B41J 1/00](#); [marking methods B41M 5/00](#); [structure or manufacture of heads, e.g. inductive, for recording by magnetisation or demagnetisation of a record carrier G11B 5/127](#); [heads for reproducing capacitive information G11B 9/07](#))

#### **NOTE**

This group covers devices reproducing only a discrete number of tones, whereas group [H04N 1/00](#) covers devices used for the reproduction of documents or the like, which devices are capable of reproducing continuous tone value scales.

In this group, the following expressions are used with the meanings indicated:

- "ink jet" involves the projection of ink on to the printing material, e.g. paper, through a nozzle as a stream of droplets or particles of colouring matter
- "continuous ink jet" means a jet of ink transformed into a continuous stream of droplets or particles of colouring matter after having left the nozzle
- "ink spray" means a spray of ink transported by a stream of

charged particles or air on  
to the printing material

- B41J 2002/005 . characterised by bringing liquid or particles selectively into contact with a printing material (printing by selective application of impact or pressure on a printing or impression-transfer material [B41J 2/22](#))
- [B41J 2002/0052](#) . . Control methods or devices for non ink jet heads
- [B41J 2002/0055](#) . . Heating elements adjacent to nozzle orifices of printhead for warming up ink meniscuses, e.g. for lowering the surface tension of the ink meniscuses
- B41J 2002/01 . . Ink jet
- [B41J 2002/012](#) . . . with intermediate transfer member
- B41J 2002/015 . . . characterised by the jet generation process ([B41J 2/215](#) takes precedence)
- B41J 2002/02 . . . . generating a continuous ink jet
- [B41J 2002/022](#) . . . . . Control methods or devices for continuous ink jet
- B41J 2002/03 . . . . . by pressure
- [B41J 2002/031](#) . . . . . Gas flow deflection
- [B41J 2002/032](#) . . . . . Deflection by heater around the nozzle
- [B41J 2002/033](#) . . . . . Continuous stream with droplets of different sizes
- B41J 2002/04 . . . . generating single droplets or particles on demand
- [B41J 2002/041](#) . . . . . Electromagnetic transducer
- [B41J 2002/043](#) . . . . . Electrostatic transducer
- B41J 2002/06 . . . . . by electric or magnetic field
- [B41J 2002/061](#) . . . . . Ejection by electric field of ink or of toner particles contained in ink
- [B41J 2002/062](#) . . . . . by using a divided counter electrode opposite to ejection openings of an electrostatic printhead, e.g. for controlling the flying direction of ejected toner particles by providing the divided parts of the counter electrode with different potentials
- [B41J 2002/063](#) . . . . . Moving solid toner particles in carrier liquid by electrostatic force acting on the toner particles, e.g. for accumulating the toner particles around an ejection electrode of an electrostatic printhead
- B41J 2002/135 . . . Nozzles
- B41J 2002/14 . . . . Structure thereof {only for on-demand ink jet heads }
- B41J 2002/14016 . . . . . {Structure of bubble jet print heads }
- [B41J 2002/14169](#) . . . . . Bubble vented to the ambience
- [B41J 2002/14177](#) . . . . . Segmented heater
- [B41J 2002/14185](#) . . . . . characterised by the position of the heater and the nozzle
- [B41J 2002/14193](#) . . . . . movable member in the ink chamber (for bubble jet [B41J 2/14048](#))
- B41J 2002/14201 . . . . . {Structure of print heads with piezoelectric elements }
- B41J 2002/14209 . . . . . {of finger type, chamber walls consisting integrally of piezoelectric material }
- [B41J 2002/14217](#) . . . . . Multi layer finger type piezoelectric element
- [B41J 2002/14225](#) . . . . . Finger type piezoelectric element on only one side of the chamber

B41J 2002/14233	.....	{of film type, deformed by bending and disposed on a diaphragm }
B41J 2002/14241	.....	having a cover around the piezoelectric thin film element
B41J 2002/1425	.....	Embedded thin film piezoelectric element
B41J 2002/14258	.....	Multi layer thin film type piezoelectric element
B41J 2002/14266	.....	Sheet-like thin film type piezoelectric element
B41J 2002/14306	.....	Flow passage between manifold and chamber
B41J 2002/14322	.....	Print head without nozzle
B41J 2002/14338	.....	Multiple pressure elements per ink chamber (for bubble jet <a href="#">B41J 2/14056</a> )
B41J 2002/14346	.....	Ejection by pressure produced by thermal deformation of ink chamber, e.g. buckling
B41J 2002/14354	.....	Sensor in each pressure chamber
B41J 2002/14362	.....	Assembling elements of heads
B41J 2002/1437	.....	Back shooter
B41J 2002/14379	.....	Edge shooter
B41J 2002/14387	.....	Front shooter
B41J 2002/14395	.....	Electrowetting
B41J 2002/14403	.....	including a filter
B41J 2002/14411	.....	Groove in the nozzle plate
B41J 2002/14419	.....	Manifold (for bubble jet <a href="#">B41J 2/14145</a> )
B41J 2002/14427	.....	{ Structure of ink jet print heads with thermal bend detached actuators }
B41J 2002/14435	.....	Moving nozzle made of thermal bend detached actuator
B41J 2002/14443	.....	Nozzle guard
B41J 2002/14459	.....	Matrix arrangement of the pressure chambers
B41J 2002/14467	.....	Multiple feed channels per ink chamber
B41J 2002/14475	.....	characterised by nozzle shapes or number of orifices per chamber
B41J 2002/14483	.....	Separated pressure chamber (for bubble jet <a href="#">B41J 2/14064</a> )
B41J 2002/14491	.....	Electrical connection (for bubble jet <a href="#">B41J 2/14072</a> )
B41J 2002/165	....	Preventing {or detecting } of nozzle clogging, e.g. cleaning, capping or moistening for nozzles
B41J 2002/16502	.....	Printhead constructions to prevent nozzle clogging or facilitate nozzle cleaning
B41J 2002/16505	.....	{Caps, spittoons or covers for cleaning or preventing drying out }
B41J 2002/16508	.....	{connected with the printer frame }
B41J 2002/16511	.....	{Constructions for cap positioning ( <a href="#">B41J 2/16547</a> takes precedence) }
B41J 2002/16514	.....	creating a distance between cap and print head, e.g. for suction or pressurising
B41J 2002/16517	.....	{ Cleaning of print head nozzles ( <a href="#">B41J 2/16505</a> , <a href="#">B41J 2/1707</a> , <a href="#">B41J 2/1714</a> take precedence) }
B41J 2002/1652	.....	{ by driving a fluid through the nozzles to the outside thereof, e.g. by applying pressure to the inside or vacuum at the outside of the print head }
B41J 2002/16526	.....	{by applying pressure only }
B41J 2002/16529	.....	Idle discharge on printing matter

B41J 2002/16535	.....	{using wiping constructions ( <a href="#">B41J 2/16552 takes precedence</a> ) }
<a href="#">B41J 2002/1655</a>	.....	with wiping surface parallel with nozzle plate and mounted on reels, e.g. cleaning ribbon cassettes
B41J 2002/16552	.....	{using cleaning fluids }
<a href="#">B41J 2002/16555</a>	.....	Air or gas for cleaning
<a href="#">B41J 2002/16558</a>	.....	Using cleaning liquid for wet wiping
<a href="#">B41J 2002/16561</a>	.....	by an electrical field
<a href="#">B41J 2002/16564</a>	.....	Heating means therefor, e.g. for hot melt inks
<a href="#">B41J 2002/16567</a>	.....	using ultrasonic or vibrating means
<a href="#">B41J 2002/1657</a>	.....	Cleaning of only nozzles or print head parts being selected
<a href="#">B41J 2002/16573</a>	.....	Cleaning process logic, e.g. for determining type or order of cleaning processes
<a href="#">B41J 2002/16576</a>	.....	Cleaning means pushed or actuated by print head movement
<a href="#">B41J 2002/16582</a>	.....	Maintenance means fixed on the print head or its carriage
B41J 2002/16585	.....	{ for paper-width or non-reciprocating print heads } M1104]
<a href="#">B41J 2002/16591</a>	.....	for line print heads above an endless belt
<a href="#">B41J 2002/16594</a>	.....	Pumps or valves for cleaning
<a href="#">B41J 2002/16597</a>	.....	Pumps for idle discharge of liquid through nozzles
B41J 2002/17	...	characterised by ink handling
B41J 2002/1721	....	{Collecting waste ink; Collectors therefor }
<a href="#">B41J 2002/1728</a>	.....	Closed waste ink collector
<a href="#">B41J 2002/1735</a>	.....	Closed waste ink collector with ink supply tank in common container
<a href="#">B41J 2002/1742</a>	.....	Open waste ink collector, e.g. ink receiving from a print head above the collector during borderless printing
B41J 2002/175	....	Ink supply systems; {Circuit parts therefor }
B41J 2002/17503	.....	{Ink cartridges }
B41J 2002/17513	.....	{Inner structure }
<a href="#">B41J 2002/17516</a>	.....	comprising a collapsible ink holder, e.g. a flexible bag
B41J 2002/17566	.....	{Ink level or ink residue control }
<a href="#">B41J 2002/17569</a>	.....	based on the amount printed or to be printed
<a href="#">B41J 2002/17573</a>	.....	using optical means for ink level indication
<a href="#">B41J 2002/17576</a>	.....	using a floater for ink level indication
<a href="#">B41J 2002/17579</a>	.....	Measuring electrical impedance for ink level indication
<a href="#">B41J 2002/17583</a>	.....	using vibration or ultra-sons for ink level indication
<a href="#">B41J 2002/17586</a>	.....	using ink bag deformation for ink level indication
<a href="#">B41J 2002/17589</a>	.....	using ink level as input for printer mode selection or for prediction of remaining printing capacity
B41J 2002/18	....	Ink recirculation systems
B41J 2002/185	.....	Ink-collectors; Ink-catchers
<a href="#">B41J 2002/1853</a>	.....	ink collectors for continuous Inkjet printers, e.g. gutters, mist suction means
<a href="#">B41J 2002/1856</a>	.....	waste ink containers
B41J 2002/205	...	for printing a discrete number of tones ( <a href="#">B41J 2/21 takes precedence</a> )
B41J 2002/2056	....	{by ink density change }

- B41J 2002/2058** . . . . . selecting different ink densities from one colour
- B41J 2002/435 . characterised by selective application of radiation to a printing material or impression-transfer material (optical elements, systems, or apparatus [G02B](#) ; modulation or deflection of light [G02F](#) ; electrophotography [G03G](#) )
- B41J 2002/447 . . using arrays of radiation sources ([B41J 2/475](#) takes precedence)
- B41J 2002/45 . . . using light-emitting diode { [LED ] or laser] arrays
- B41J 2002/453** . . . . . self-scanning
- B41J 2002/475 . . for heating selectively {by radiation or ultrasonic waves }
- B41J 2002/4753 . . . {using thermosensitive substrates, e.g. paper }
- B41J 2002/4756** . . . . . Erasing by radiation

**B41J 2025/00** **Actions or mechanisms not otherwise provided for**

- B41J 2025/008** . comprising a plurality of print heads placed around a drum

**B41J 2029/00** **Details of, or accessories for, typewriters or selective printing mechanisms not otherwise provided for**

- B41J 2029/38 . Drives, motors, controls or automatic cut-off devices for the entire printing mechanism
- B41J 2029/393 . . Devices for controlling or analysing the entire machine; { Controlling or analysing mechanical parameters involving printing of test patterns }
- B41J 2029/3932** . . . Battery or power source mounted on the carriage
- B41J 2029/3935** . . . by means of printed test patterns
- B41J 2029/3937** . . . Wireless communication between the printer and the cartridge, carriage or printhead

**Guidance heading:**

**B41J 2202/00** **Embodiments of or processes related to ink-jet or thermal heads**

- B41J 2202/01** . Embodiments of or processes related to ink-jet heads
- B41J 2202/02** . . Air-assisted ejection
- B41J 2202/03** . . Specific materials used
- B41J 2202/04** . . Heads using conductive ink
- B41J 2202/05** . . Heads having a valve
- B41J 2202/06** . . Heads merging droplets coming from the same nozzle
- B41J 2202/07** . . dealing with air bubbles
- B41J 2202/08** . . dealing with thermal variations, e.g. cooling
- B41J 2202/09** . . Ink jet technology used for manufacturing optical filters
- B41J 2202/10** . . Finger type piezoelectric elements
- B41J 2202/11** . . characterised by specific geometrical characteristics
- B41J 2202/12** . . with ink circulating through the whole print head
- B41J 2202/13** . . Heads having an integrated circuit

- B41J 2202/14 . . Mounting head into the printer
- B41J 2202/15 . . Moving nozzle or nozzle plate (for moving nozzle or nozzle plate made of thermal bend actuator [B41J 2002/14435](#))
- B41J 2202/16 . . Nozzle heaters
- B41J 2202/17 . . Readable information on the head
- B41J 2202/18 . . Electrical connection established using vias
- B41J 2202/19 . . Assembling head units
- B41J 2202/20 . . Modules
- B41J 2202/21 . . Line printing
- B41J 2202/22 . . Manufacturing print heads
- 
- B41J 2202/30 . Embodiments of or processes related to thermal heads
- B41J 2202/31 . . Thermal printer with head or platen movable
- B41J 2202/32 . . Thermal head for perforating stencil
- B41J 2202/33 . . Thermal printer with pre-coating or post-coating ribbon system
- B41J 2202/34 . . Thermal printer with pre-coating or post-processing
- B41J 2202/35 . . Thermal printing on id card
- B41J 2202/36 . . Thermal printing on disk-shaped medium
- B41J 2202/37 . . Writing and erasing thermal head
- B41J 2202/38 . . Test pattern thermal printing
- 
- B41J 2202/50 . Embodiments of processes related to optical heads