

CPC COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

PRINTING

B41 PRINTING; LINING MACHINES; TYPEWRITERS; STAMPS

B41J TYPEWRITERS; SELECTIVE PRINTING MECHANISMS, i.e. MECHANISMS PRINTING OTHERWISE THAN FROM A FORME; CORRECTION OF TYPOGRAPHICAL ERRORS

NOTES

1. 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.
2. 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.
3. 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.

<u>Kinds of typewriters or of selective printing mechanisms</u>			
1/00	Typewriters or selective printing mechanisms characterised by the mounting, arrangement or disposition of the types or dies	1/28	. . . Carriers stationary for impression, e.g. with the types or dies not moving relative to the carriers
		1/30	. . . . with the types or dies moving relative to the carriers or mounted on flexible carriers
1/02	. with separate or detached types or dies	1/32	. . the plane of the type or die face being parallel to the axis of rotation, e.g. with type on the periphery of cylindrical carriers (B41J 1/60 takes precedence)
1/04	. with types or dies carried upon levers or radial arms, e.g. manually operated (B41J 1/16 takes precedence)	1/34	. . . Carriers rotating during impression
1/06	. . on power-operated levers or arms	1/36	. . . Carriers sliding for impression, e.g. manually operated
1/08	. with types or dies carried on sliding bars or rods	1/38	. . . . power operated
1/10	. . on end surfaces thereof	1/40	. . . Carriers swinging for impression
1/12	. . on side surfaces thereof, e.g. fixed thereto	1/42	. . . . about an axis parallel to the axis of rotation of the carrier
1/14	. . the types or dies being movable relative to the bars or rods (mounted on flexible bars or rods B41J 1/16)	1/44	. . . Carriers stationary for impression
1/16	. with types or dies arranged in stationary or sliding cases or frames or upon flexible strips, plates, bars or rods	1/46	. . . . Types or dies fixed on wheel, drum, cylinder, or like carriers
1/18	. with types or dies strung on wires or rods	1/48	. . . . with a plurality of carriers, one for each character space
1/20	. with types or dies mounted on endless bands or the like	1/50	. . . . . with one or more carriers travelling across copy material in letter-space direction
1/22	. with types or dies mounted on carriers rotatable for selection	1/52	. . . . . with copy material moving in the letter-space direction, and the carrier mounting being fixed relative to the machine
1/24	. . the plane of the type or die face being perpendicular to the axis of rotation (B41J 1/60 takes precedence)	1/54	. . . . Types or dies movable on wheel, drum, cylinder or like carriers
1/243	. . . { Mounting or fixing the carriers }	1/56	. . . . Types or dies on shuttles or like loose carriers
1/246	. . . { Cartridges for the carriers }	1/58	. . . . Types or dies upon arcuate bars
1/26	. . . Carriers moving for impression (B41J 1/27 takes precedence)	1/60	. with types or dies on spherical, truncated-spherical, or like surfaces
1/27	. . . Carriers moving during impression		

<p>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)</p> <p>NOTES</p> <p>1. This group <u>covers</u> 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.</p> <p>2. In this group, the following expressions are used with the meanings indicated:</p> <ul style="list-style-type: none"> • "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 	<p>2/04505 {aiming at correcting alignment}</p> <p>2/04506 {aiming at correcting manufacturing tolerances}</p> <p>2/04508 {aiming at correcting other parameters}</p> <p>2/0451 {for detecting failure, e.g. clogging, malfunctioning actuator}</p> <p>2/04511 {for electrostatic discharge protection}</p> <p>2/04513 {for increasing lifetime}</p> <p>2/04515 {preventing overheating}</p> <p>2/04516 {preventing formation of satellite drops}</p> <p>2/04518 {reducing costs}</p> <p>2/0452 {reducing demand in current or voltage}</p> <p>2/04521 {reducing number of signal lines needed}</p> <p>2/04523 {reducing size of the apparatus}</p> <p>2/04525 {reducing occurrence of cross talk}</p> <p>2/04526 {controlling trajectory}</p> <p>2/04528 {aiming at warming up the head}</p> <p>2/0453 {controlling a head having a dummy chamber}</p> <p>2/04531 {controlling a head having a heater in the manifold}</p> <p>2/04533 {controlling a head having several actuators per chamber}</p> <p>2/04535 {involving calculation of drop size, weight or volume}</p> <p>2/04536 {using history data}</p> <p>2/04538 {involving calculation of heater resistance}</p> <p>2/0454 {involving calculation of temperature}</p> <p>2/04541 {Specific driving circuit}</p> <p>2/04543 {Block driving}</p> <p>2/04545 {Dynamic block driving}</p> <p>2/04546 {Multiplexing}</p> <p>2/04548 {Details of power line section of control circuit}</p> <p>2/0455 {Details of switching sections of circuit, e.g. transistors}</p> <p>2/04551 {using several operating modes}</p> <p>2/04553 {detecting ambient temperature}</p> <p>2/04555 {detecting current}</p> <p>2/04556 {detecting distance to paper}</p> <p>2/04558 {detecting presence or properties of a dot on paper}</p> <p>2/0456 {detecting drop size, volume or weight}</p> <p>2/04561 {detecting presence or properties of a drop in flight}</p> <p>2/04563 {detecting head temperature; Ink temperature}</p> <p>2/04565 {detecting heater resistance}</p> <p>2/04566 {detecting humidity}</p> <p>2/04568 {Control according to number of actuators used simultaneously}</p> <p>2/0457 {Power supply level being detected or varied}</p> <p>2/04571 {detecting viscosity}</p> <p>2/04573 {Timing; Delays}</p>
<p>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)</p>	
<p>2002/0052 {Control methods or devices for non ink jet heads}</p>	
<p>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}</p>	
<p>2/0057 {where an intermediate transfer member receives the ink before transferring it on the printing material}</p>	
<p>2/01 Ink jet</p>	
<p>2002/012 {with intermediate transfer member}</p>	
<p>2/015 characterised by the jet generation process (B41J 2/215 takes precedence)</p>	
<p>2/02 generating a continuous ink jet</p>	
<p>2002/022 {Control methods or devices for continuous ink jet}</p>	
<p>2/025 by vibration</p>	
<p>2/03 by pressure</p>	
<p>2002/031 {Gas flow deflection}</p>	
<p>2002/032 {Deflection by heater around the nozzle}</p>	
<p>2002/033 {Continuous stream with droplets of different sizes}</p>	
<p>2/035 by electric or magnetic field</p>	
<p>2/04 generating single droplets or particles on demand</p>	
<p>2002/041 {Electromagnetic transducer}</p>	
<p>2002/043 {Electrostatic transducer}</p>	
<p>2/045 by pressure, e.g. electromechanical transducers</p>	
<p>2/04501 {Control methods or devices therefor, e.g. driver circuits, control circuits}</p>	
<p>2/04503 {aiming at compensating carriage speed}</p>	

2/04575	. . . . .	{controlling heads of acoustic type}	2/125	. . . .	Sensors, e.g. deflection sensors { nozzle clogging detection for cleaning reasons B41J 2/16579 ; detection for compensation for failed nozzles B41J 2/2139 }
2/04576	. . . . .	{controlling heads of electrostatic type}	2/13	. . . .	for inclination of printed pattern
2/04578	. . . . .	{controlling heads based on electrostatically-actuated membranes}	2/135	. . . .	Nozzles
2/0458	. . . . .	{controlling heads based on heating elements forming bubbles}	2/14	. . . .	Structure thereof {only for on-demand ink jet heads}
2/04581	. . . . .	{controlling heads based on piezoelectric elements}	2/14008	. . . . .	{Structure of acoustic ink jet print heads}
2/04583	. . . . .	{controlling heads based on discharge by lowering the surface tension of meniscus}	2/14016	. . . . .	{Structure of bubble jet print heads}
2/04585	. . . . .	{controlling heads based on thermal bent actuators}	2/14024	. . . . .	{Assembling head parts}
2/04586	. . . . .	{controlling heads of a type not covered by groups B41J 2/04575 - B41J 2/04585 , or of an undefined type}	2/14032	. . . . .	{Structure of the pressure chamber}
2/04588	. . . . .	{using a specific waveform}	2/1404	. . . . .	{Geometrical characteristics}
2/0459	. . . . .	{Height of the driving signal being adjusted}	2/14048	. . . . .	{Movable member in the chamber}
2/04591	. . . . .	{Width of the driving signal being adjusted}	2/14056	. . . . .	{Plural heating elements per ink chamber}
2/04593	. . . . .	{Dot-size modulation by changing the size of the drop}	2/14064	. . . . .	{Heater chamber separated from ink chamber by a membrane}
2/04595	. . . . .	{Dot-size modulation by changing the number of drops per dot}	2/14072	. . . . .	{Electrical connections, e.g. details on electrodes, connecting the chip to the outside...}
2/04596	. . . . .	{Non-ejecting pulses}	2/1408	. . . . .	{Structure dealing with thermal variations, e.g. cooling device, thermal coefficients of materials}
2/04598	. . . . .	{Pre-pulse}	2/14088	. . . . .	{Structure of heating means}
2/05	. . . . .	produced by the application of heat	2/14096	. . . . .	{Current flowing through the ink}
2/055	. . . . .	Devices for absorbing or preventing back-pressure	2/14104	. . . . .	{Laser or electron beam heating the ink}
2/06	. . . . .	by electric or magnetic field	2/14112	. . . . .	{Resistive element}
2002/061	. . . . .	{Ejection by electric field of ink or of toner particles contained in ink}	2/1412	. . . . .	{Shape}
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}	2/14129	. . . . .	{Layer structure}
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}	2/14137	. . . . .	{Resistor surrounding the nozzle opening}
2/065	. . . . .	involving the preliminary making of ink protuberances	2/14145	. . . . .	{Structure of the manifold}
2/07	. . . .	characterised by jet control (B41J 2/205 takes precedence)	2/14153	. . . . .	{Structures including a sensor}
2/072	. . . . .	{by thermal compensation}	2/14161	. . . . .	{Structure having belt or drum with holes filled with ink}
2/075	. . . . .	for many-valued deflection	2002/14169	. . . . .	{Bubble vented to the ambience}
2/08	. . . . .	charge-control type	2002/14177	. . . . .	{Segmented heater}
2/085	. . . . .	Charge means, e.g. electrodes	2002/14185	. . . . .	{characterised by the position of the heater and the nozzle}
2/09	. . . . .	Deflection means	2002/14193	. . . . .	{movable member in the ink chamber}
2/095	. . . . .	electric field-control type	2/14201	. . . . .	{Structure of print heads with piezoelectric elements}
2/10	. . . . .	magnetic field-control type	2/14209	. . . . .	{of finger type, chamber walls consisting integrally of piezoelectric material}
2/105	. . . . .	for binary-valued deflection	2002/14217	. . . . .	{Multi layer finger type piezoelectric element}
2/11	. . . . .	for ink spray	2002/14225	. . . . .	{Finger type piezoelectric element on only one side of the chamber}
2/115	. . . . .	synchronising the droplet separation and charging time	2/14233	. . . . .	{of film type, deformed by bending and disposed on a diaphragm}
2/12	. . . . .	testing or correcting charge or deflection	2002/14241	. . . . .	{having a cover around the piezoelectric thin film element}
			2002/1425	. . . . .	{Embedded thin film piezoelectric element}
			2002/14258	. . . . .	{Multi layer thin film type piezoelectric element}
			2002/14266	. . . . .	{Sheet-like thin film type piezoelectric element}

2/14274	{of stacked structure type, deformed by compression/extension and disposed on a diaphragm}	2/1614	{of cantilever type}
2/14282	{of cantilever type}	2/1615	{of tubular type}
2/1429	{of tubular type}	2/1617	{of disc type}
2/14298	{of disc type}	2/1618	{Fixing the piezoelectric elements}
2002/14306	{Flow passage between manifold and chamber}	2/162	{Manufacturing of the nozzle plates}
2/14314	{Structure of ink jet print heads with electrostatically actuated membrane}	2/1621	{Manufacturing processes}
2002/14322	{Print head without nozzle}	2/1623	{bonding and adhesion}
2/1433	{Structure of nozzle plates}	2/1625	{electroforming}
2002/14338	{Multiple pressure elements per ink chamber}	2/1626	{etching}
2002/14346	{Ejection by pressure produced by thermal deformation of ink chamber, e.g. buckling}	2/1628	{dry etching}
2002/14354	{Sensor in each pressure chamber}	2/1629	{wet etching}
2002/14362	{Assembling elements of heads}	2/1631	{photolithography}
2002/1437	{Back shooter}	2/1632	{machining}
2002/14379	{Edge shooter}	2/1634	{laser machining}
2002/14387	{Front shooter}	2/1635	{dividing the wafer into individual chips}
2002/14395	{Electrowetting}	2/1637	{molding}
2002/14403	{including a filter}	2/1639	{sacrificial molding}
2002/14411	{Groove in the nozzle plate}	2/164	{thin film formation}
2002/14419	{Manifold}	2/1642	{thin film formation by CVD [chemical vapor deposition]}
2/14427	{Structure of ink jet print heads with thermal bend detached actuators}	2/1643	{thin film formation by plating}
2002/14435	{Moving nozzle made of thermal bend detached actuator}	2/1645	{thin film formation by spincoating}
2002/14443	{Nozzle guard}	2/1646	{thin film formation by sputtering}
2/14451	{Structure of ink jet print heads discharging by lowering surface tension of meniscus}	2/1648	{Production of print heads with thermal bend detached actuators}
2002/14459	{Matrix arrangement of the pressure chambers}	2/165	Prevention {or detection} of nozzle clogging, e.g. cleaning, capping or moistening for nozzles
2002/14467	{Multiple feed channels per ink chamber}	2/16502	{Printhead constructions to prevent nozzle clogging or facilitate nozzle cleaning}
2002/14475	{characterised by nozzle shapes or number of orifices per chamber}	2/16505	{Caps, spittoons or covers for cleaning or preventing drying out}
2002/14483	{Separated pressure chamber}		WARNING
2002/14491	{Electrical connection}		Group B41J 2/16505 is impacted by reclassification into groups B41J 2/16507 and B41J 2/16508 .
2/145	Arrangement thereof		Groups B41J 2/16505 , B41J 2/16507 and B41J 2/16508 should be considered in order to perform a complete search.
2/15	for serial printing	2/16507	{integral with the printhead}
2/155	for line printing		WARNING
2/16	Production of nozzles		Group B41J 2/16507 is incomplete pending reclassification of documents from group B41J 2/16505 .
2/1601	{Production of bubble jet print heads (B41J 2/1606 , B41J 2/162 take precedence)}		Groups B41J 2/16505 and B41J 2/16507 should be considered in order to perform a complete search.
2/1603	{of the front shooter type}		
2/1604	{of the edge shooter type}		
2/1606	{Coating the nozzle area or the ink chamber}		
2/1607	{Production of print heads with piezoelectric elements (B41J 2/1606 , B41J 2/162 take precedence)}		
2/1609	{of finger type, chamber walls consisting integrally of piezoelectric material}		
2/161	{of film type, deformed by bending and disposed on a diaphragm}		
2/1612	{of stacked structure type, deformed by compression/extension and disposed on a diaphragm}		

- 2/16508 {connected with the printer frame}
- WARNING**
- Group [B41J 2/16508](#) is incomplete pending reclassification of documents from group [B41J 2/16505](#).
- Groups [B41J 2/16505](#) and [B41J 2/16508](#) should be considered in order to perform a complete search.
- 2/16511 {Constructions for cap positioning ([B41J 2/16547](#) takes precedence)}
- 2/16514 {creating a distance between cap and printhead, e.g. for suction or pressurising}
- 2/16517 {Cleaning of print head nozzles ([B41J 2/16505](#), [B41J 2/1707](#) take precedence)}
- 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}
- 2/16523 {Waste ink transport from caps or spittoons, e.g. by suction ([Collecting or collectors of waste ink B41J 2/1721](#))}
- WARNING**
- Group [B41J 2/16523](#) is impacted by reclassification into group [B41J 2/1721](#).
- Groups [B41J 2/16523](#) and [B41J 2/1721](#) should be considered in order to perform a complete search.
- 2/16526 {by applying pressure only}
- 2/16529 {Idle discharge on printing matter}
- 2/16532 {by applying vacuum only}
- 2/16535 {using wiping constructions ([B41J 2/16552](#) takes precedence)}
- 2/16538 {with brushes or wiper blades perpendicular to the nozzle plate}
- 2/16541 {Means to remove deposits from wipers or scrapers}
- 2/16544 {Constructions for the positioning of wipers}
- 2/16547 {the wipers and caps or spittoons being on the same movable support}
- 2002/1655 {with wiping surface parallel with nozzle plate and mounted on reels, e.g. cleaning ribbon cassettes}
- 2/16552 {using cleaning fluids}
- 2002/16555 {Air or gas for cleaning}
- 2002/16558 {Using cleaning liquid for wet wiping}
- 2002/16561 {by an electrical field}
- 2002/16564 {Heating means therefor, e.g. for hot melt inks}
- 2002/16567 {using ultrasonic or vibrating means}
- 2002/1657 {Cleaning of only nozzles or print head parts being selected}
- 2002/16573 {Cleaning process logic, e.g. for determining type or order of cleaning processes}
- 2002/16576 {Cleaning means pushed or actuated by print head movement}
- 2/16579 {Detection means therefor, e.g. for nozzle clogging}
- 2002/16582 {Maintenance means fixed on the print head or its carriage}
- 2/16585 {for paper-width or non-reciprocating print heads}
- 2/16588 {Print heads movable towards the cleaning unit}
- 2002/16591 {for line print heads above an endless belt}
- 2002/16594 {Pumps or valves for cleaning}
- 2002/16597 {Pumps for idle discharge of liquid through nozzles}
- 2/17 characterised by ink handling {(cleaning by driving a fluid through the nozzles to the outside thereof [B41J 2/1652](#); for treating before, during or after printing or for uniform coating or laminating the copy material before or after printing [B41J 11/0015](#))}
- 2/1707 {Conditioning of the inside of ink supply circuits, e.g. flushing during start-up or shut-down}
- 2/1714 {Conditioning of the outside of ink supply systems, e.g. inkjet collector cleaning, ink mist removal ([B41J 2/08](#), [B41J 2/16517](#), [B41J 2/18](#) take precedence)}
- 2/1721 {Collecting waste ink; Collectors therefor}
- WARNING**
- Group [B41J 2/1721](#) is incomplete pending reclassification of documents from group [B41J 2/16523](#).
- Groups [B41J 2/16523](#) and [B41J 2/1721](#) should be considered in order to perform a complete search.
- 2/1728 {Closed waste ink collectors}
- 2/1735 {with ink supply tank in common containers}
- 2/1742 {Open waste ink collectors, e.g. ink receiving from a print head above the collector during borderless printing}
- 2/175 Ink supply systems {; Circuit parts therefor}
- 2/17503 {Ink cartridges}
- 2/17506 {Refilling of the cartridge}
- 2/17509 {Whilst mounted in the printer}
- 2/17513 {Inner structure}
- 2002/17516 {comprising a collapsible ink holder, e.g. a flexible bag}
- 2/1752 {Mounting within the printer}
- 2/17523 {Ink connection}
- 2/17526 {Electrical contacts to the cartridge}
- 2/1753 {Details of contacts on the cartridge, e.g. protection of contacts}
- 2/17533 {Storage or packaging of ink cartridges}
- 2/17536 {Protection of cartridges or parts thereof, e.g. tape}
- 2/1754 {with means attached to the cartridge, e.g. protective cap}

- 2/17543 {Cartridge presence detection or type identification}
 - 2/17546 {electronically}
 - 2/1755 {mechanically}
 - 2/17553 {Outer structure}
 - 2/17556 {Means for regulating the pressure in the cartridge}
 - 2/17559 {Cartridge manufacturing}
 - 2/17563 {Ink filters}
 - 2/17566 {Ink level or ink residue control}
 - 2002/17569 {based on the amount printed or to be printed}
 - 2002/17573 {using optical means for ink level indication}
 - 2002/17576 {using a floater for ink level indication}
 - 2002/17579 {Measuring electrical impedance for ink level indication}
 - 2002/17583 {using vibration or ultra-sons for ink level indication}
 - 2002/17586 {using ink bag deformation for ink level indication}
 - 2002/17589 {using ink level as input for printer mode selection or for prediction of remaining printing capacity}
 - 2/17593 {Supplying ink in a solid state}
 - 2/17596 {Ink pumps, ink valves}
 - 2/18 Ink recirculation systems
 - 2/185 Ink-collectors; Ink-catchers
 - 2002/1853 {ink collectors for continuous Inkjet printers, e.g. gutters, mist suction means}
 - 2002/1856 {waste ink containers}
 - 2/19 for removing air bubbles
 - 2/195 for monitoring ink quality
 - 2/20 for preventing or detecting contamination of compounds
 - 2/205 for printing a discrete number of tones
(B41J 2/21 takes precedence)
 - 2/2052 {by dot superpositioning, e.g. multipass doubling}
 - 2/2054 {by the variation of dot disposition or characteristics, e.g. dot number density, dot shape}
 - 2/2056 {by ink density change}
 - 2002/2058 {selecting different ink densities from one colour}
 - 2/21 for multi-colour printing
 - 2/2103 {Features not dealing with the colouring process *per se*, e.g. construction of printers or heads, driving circuit adaptations}
 - 2/2107 {characterised by the ink properties (supplying ink in a solid state B41J 2/17593)}
 - 2/211 {Mixing of inks, solvent or air prior to paper contact}
- WARNING**
- Group [B41J 2/211](#) is incomplete pending reclassification of documents from group [B41J 2/2114](#).
- Groups [B41J 2/211](#) and [B41J 2/2114](#) should be considered in order to perform a complete search.
- 2/2114 {Ejecting specialized liquids, e.g. transparent or processing liquids
(B41J 2/211 takes precedence)}
- WARNING**
- Group [B41J 2/2114](#) is impacted by reclassification into groups [B41J 2/211](#) and [B41J 2/2117](#).
- Groups [B41J 2/211](#), [B41J 2/2114](#) and [B41J 2/2117](#) should be considered in order to perform a complete search.
- 2/2117 {Ejecting white liquids}
- WARNING**
- Group [B41J 2/2117](#) is incomplete pending reclassification of documents from group [B41J 2/2114](#).
- Groups [B41J 2/2114](#) and [B41J 2/2117](#) should be considered in order to perform a complete search.
- 2/2121 {characterised by dot size, e.g. combinations of printed dots of different diameter}
 - 2/2125 {by means of nozzle diameter selection}
 - 2/2128 {by means of energy modulation (control methods or devices therefor, e.g. driver circuits or control circuits B41J 2/04501)}
 - 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 G06K 15/102; colour conversion H04N 1/40)}
 - 2/2135 {Alignment of dots}
 - 2/2139 {Compensation for malfunctioning nozzles creating dot place or dot size errors (generating single droplets or particles on demand by pressure, e.g. electromechanical transducers B41J 2/045)}
 - 2/2142 {Detection of malfunctioning nozzles (generating single droplets or particles on demand by pressure, e.g. electromechanical transducers B41J 2/045, B41J 2/05; jet deflection sensors B41J 2/125; for cleaning purposes B41J 2/16579)}
 - 2/2146 {for line print heads}
 - 2/215 by passing a medium, e.g. consisting of an air or particle stream, through an ink mist
 - 2/22 characterised by selective application of impact or pressure on a printing material or impression-transfer material
 - 2/225 ballistic, e.g. using solid balls or pellets
 - 2/23 using print wires
 - 2/235 Print head assemblies
 - 2/24 serial printer type (B41J 2/25, B41J 2/265 take precedence)
 - 2/245 line printer type (B41J 2/25, B41J 2/265 take precedence)
 - 2/25 Print wires
 - 2/255 Arrangement of the print ends of the wires
 - 2/26 Connection of print wire and actuator
 - 2/265 Guides for print wires

- 2/27 . . . Actuators for print wires
- 2/275 of clapper type (B41J 2/28 takes precedence)
- 2/28 of spring charge type, i.e. with mechanical power under electro-magnetic control
- 2/285 of plunger type
- 2/29 of moving-coil type
- 2/295 using piezoelectric elements
- 2/30 . . . Control circuits for actuators
- 2/305 . . . Ink supply apparatus (ink ribbons, ink-ribbon mechanisms B41J 31/00 - B41J 35/00)
- 2/31 . . using a print element with projections on its surface impacted or impressed by hammers
- 2/315 . characterised by selective application of heat to a heat sensitive printing or impression-transfer material (B41J 2/385, B41J 2/435 take precedence)
- 2/32 . . using thermal heads
- 2/325 . . . by selective transfer of ink from ink carrier, e.g. from ink ribbon or sheet
- 2/33 from ink roller
- 2/335 . . . Structure of thermal heads
- 2/33505 {Constructional details}
- 2/3351 {Electrode layers}
- 2/33515 {Heater layers}
- 2/3352 {Integrated circuits}
- 2/33525 {Passivation layers}
- 2/3353 {Protective layers}
- 2/33535 {Substrates}
- 2/3354 {characterised by geometry}
- 2/33545 {characterised by dimensions}
- 2/3355 {characterised by materials}
- 2/33555 {characterised by type}
- 2/3356 {Corner type resistors}
- 2/33565 {Edge type resistors}
- 2/3357 {Surface type resistors}
- 2/33575 {Processes for assembling process heads}
- 2/3358 {Cooling arrangements}
- 2/33585 {Hollow parts under the heater}
- 2/3359 {Manufacturing processes}
- 2/33595 {Conductors through the layered structure}
- 2/34 comprising semiconductors
- 2/345 . . . characterised by the arrangement of resistors or conductors
- 2/35 . . . providing current or voltage to the thermal head
- 2/355 Control circuits for heating-element selection
- 2/3551 {Block driving}
- 2/3553 {Heater resistance determination}
- 2/3555 {Historical control}
- 2/3556 {Preheating pulses}
- 2/3558 {Voltage control or determination}
- 2/36 Print density control
- 2/362 {Correcting density variation}
- 2/365 by compensation for variation in temperature
- 2/37 by compensation for variation in current
- 2/375 . . . Protection arrangements against overheating
- 2/38 . . Preheating, i.e. heating to a temperature insufficient to cause printing
- 2/385 . characterised by selective supply of electric current or selective application of magnetism to a printing or impression-transfer material (B41J 2/005 takes precedence)
- 2/3855 . . {Electrographic print heads using processes not otherwise provided for, e.g. electrolysis}
- 2/39 . . using multi-stylus heads
- 2/395 . . . Structure of multi-stylus heads
- 2/40 . . . providing current or voltage to the multi-stylus head
- 2/405 Selection of the stylus or auxiliary electrode to be supplied
- 2/41 . . for electrostatic printing (B41J 2/39 takes precedence)
- 2/415 . . . by passing charged particles through a hole or a slit
- 2/4155 {for direct electrostatic printing [DEP]}
- 2/42 . . for heating selectively
- 2/425 . . for removing surface layer selectively from electro-sensitive material, e.g. metal coated paper
- 2/43 . . for magnetic printing
- 2/435 . characterised by selective application of radiation to a printing material or impression-transfer material
- 2/44 . . using single radiation source {per colour}, e.g. lighting beams or shutter arrangements (B41J 2/475 takes precedence)
- 2/442 . . . {using lasers}
- 2/445 . . . using liquid crystals
- 2/447 . . using arrays of radiation sources (B41J 2/475 takes precedence)
- 2/4473 . . . {using liquid crystal [LC] arrays}
- 2/4476 . . . {using cathode ray or electron beam tubes}
- 2/45 . . . using light-emitting diode {[LED] or laser} arrays
- 2/451 {Special optical means therefor, e.g. lenses, mirrors, focusing means}
- 2002/453 {self-scanning}
- 2/455 . . . using laser arrays {, the laser array being smaller than the medium to be recorded}
- 2/46 . . . characterised by using glass fibres
- 2/465 . . using masks, e.g. light-switching masks
- 2/4655 . . . {using character templates}
- 2/47 . . using the combination of scanning and modulation of light
- 2/471 . . . {using dot sequential main scanning by means of a light deflector, e.g. a rotating polygonal mirror}
- 2/473 {using multiple light beams, wavelengths or colours}
- 2/475 . . for heating selectively {by radiation or ultrasonic waves}
- 2/4753 . . . {using thermosensitive substrates, e.g. paper}
- 2002/4756 {Erasing by radiation}
- 2/48 . . . melting ink on a film or melting ink granules
- 2/485 . characterised by the process of building-up characters {or image elements} applicable to two or more kinds of printing or marking processes
- 2/49 . . by writing
- 2/495 . . by selective printing from a rotating helical member
- 2/50 . . by the selective combination of two or more non-identical printing elements
- 2/505 . . from an assembly of identical printing elements
- 2/5052 . . . {with special adaptations characterised by the ink properties (B41J 2/2107 takes precedence)}
- 2/5054 . . . {with special adaptations characterised by dot size (B41J 2/2121 takes precedence)}

- 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](#))}
- 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](#))}
- 2/51 . . . serial printer type
- 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
- 2/515 . . . line printer type
- 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](#))
- 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
- 3/00 Typewriters or selective printing or marking mechanisms characterised by the purpose for which they are constructed**
- 3/01 . . . for special character, e.g. for Chinese characters or barcodes
- 3/24 . . . for perforating or stencil cutting using special types or dies
- 3/26 . . . for stenographic writing
- 3/28 . . . for printing downwardly on flat surfaces, e.g. of books, drawings, boxes {, envelopes, e.g. flat-bed ink-jet printers}
- 3/283 . . . {on bank books or the like}
- 3/286 . . . {on boxes}
- 3/30 . . . for printing with large type, e.g. on bulletins, tickets
- 3/32 . . . for printing in Braille or with keyboards specially adapted for use by blind or disabled persons
- 3/34 . . . for printing musical scores
- 3/36 . . . for portability {, i.e. hand-held printers or laptop printers ([B41J 3/4075 takes precedence](#))}
- 3/365 . . . {Toy typewriters (toy imitations of typewriters [A63H 33/3077](#))}
- 3/37 . . . Foldable typewriters
- 3/38 . . . for embossing, e.g. for making matrices for stereotypes
- 3/382 . . . {of tapes, e.g. tape cartridges}
- 3/385 . . . {of plates, e.g. metal plates, plastic cards}
- 3/387 {with automatic plate transport systems, e.g. for credit cards}
- 3/39 . . . hand-held
- 3/407 . . . for marking on special material
- 3/4071 . . . {Printing on disk-shaped media, e.g. CDs}
- 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 64/112](#))}
- 3/40731 {Holders for objects, e. g. holders specially adapted to the shape of the object to be printed or adapted to hold several objects}
- 3/40733 {Printing on cylindrical or rotationally symmetrical objects, e. g. on bottles}
- 3/4075 . . . {Tape printers; Label printers}
- 3/4076 . . . {printing on rewritable, bistable "electronic paper" by a focused electric or magnetic field}
- 3/4078 . . . {Printing on textile}
- 3/413 . . . for metal
- 3/42 . . . Two or more complete typewriters coupled for simultaneous operation
- 3/44 . . . Typewriters or selective printing mechanisms having dual functions or combined with, or coupled to, apparatus performing other functions
- 3/445 {Printers integrated in other types of apparatus, e.g. printers integrated in cameras}
- 3/46 . . . Printing mechanisms combined with apparatus providing a visual indication
- 3/50 . . . Mechanisms producing characters by printing and also producing a record by other means {, e.g. printer combined with RFID writer}
- 3/51 the printed and recorded information being identical; using type elements with code-generating means
- 3/54 . . . with two or more sets of type or printing elements ([B41J 3/60 takes precedence](#))
- 3/543 {with multiple inkjet print heads ([B41J 2/17503](#), [B41J 2/2103 take precedence](#))}
- 3/546 {Combination of different types, e.g. using a thermal transfer head and an inkjet print head}
- 3/60 . . . for printing on both faces of the printing material
- 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](#))
- Common details or accessories**
- 5/00 Devices or arrangements for controlling character selection (methods or arrangements for sensing record carriers G06K 7/00)**
- 5/02 . . . Character or syllable selected by setting an index
- 5/04 . . . Single-character selection
- 5/06 . . . Multiple-character selection
- 5/08 . . . Character or syllable selected by means of keys or keyboards of the typewriter type
- WARNING**
- Groups [B41J 5/08](#) - [B41J 5/28](#) are no longer used for the classification of new documents. See [G06F 3/00](#)
- 5/10 . . . Arrangements of keyboards {, e.g. key button disposition}
- 5/102 {Keyboard overlays}
- 5/105 {Constructional details of keyboard frames, e.g. adjusting or fixation means}
- 5/107 {for special purposes, e.g. Braille, Chinese, multi-language options}

- 5/12 . . Construction of key buttons
- 5/14 . . Construction of key levers
- 5/16 . . Mounting or connecting key buttons on or to key levers
- 5/18 . . Locks
- 5/20 . . . for subsidiary keys, e.g. for shift keys
- 5/22 . . . Interlocks between keys, e.g. without detent arrangements
- 5/24 with detent arrangements
- 5/26 . . Regulating touch, key dip or stroke, or the like
- 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
- 5/30 . Character or syllable selection controlled by recorded information
- 5/31 . . characterised by form of recorded information
- 5/32 . . . by printed, embossed, or photographic records, e.g. cards, sheets
- 5/34 by strips or tapes
- 5/36 . . . by punched records, e.g. cards, sheets
- 5/38 by strips or tapes
- 5/40 . . . by magnetic or electrostatic records, e.g. cards, sheets
- 5/42 by strips or tapes
- 5/44 . . characterised by storage of recorded information
- 5/46 . . . on internal storages
- 5/48 . . . on external storages
- 5/50 on a single storage
- 5/51 on more than one separate storage, e.g. on additional correction strips or tapes
- 5/52 . . characterised by the provision of additional devices for producing a punched or like record, e.g. simultaneously
- 7/00 Type-selecting or type-actuating mechanisms**
(index setting [B41J 5/02](#))
- 7/005 . {Type-selecting actions or mechanisms by unusual means, e.g. for use by physically disabled persons}
- 7/02 . Type-lever actuating mechanisms
- 7/04 . . Levers mounted on fixed pivots
- 7/06 . . . and connected to transmission members, e.g. toothed gearing
- 7/08 with pin-and-slot or like loose connections; Cam-slot members
- 7/10 Chain, belt, flexible cable, or like members
- 7/12 . . . U-shaped type-lever on two pivots
- 7/14 . . . Single key-and-type lever
- 7/16 . . . Type-head pivoted to or rotating on lever
- 7/18 . . Levers having moving or variable fulcra to alter the mechanical advantage during the stroke
- 7/20 . . Levers having moving pivots fixed relative to the lever; Type- bars each pivoted on two links
- 7/22 . . Type-baskets; Bearings or hangers for type levers
- 7/24 . . Construction of type-levers ([U-shaped levers B41J 7/12](#))
- 7/26 . . Special means, e.g. repulsers, for ensuring return of type- levers
- 7/28 . . Key lever and type member returned independently to rest position
- 7/30 . . Preventing rebound or clash of levers or type members
- 7/32 . Type-face selected by operation of sliding members
- 7/34 . Type-face selected by operation of rotary members
- 7/36 . Selecting arrangements applied to type-carriers rotating during impression
- 7/38 . . Type movable on carrier for selection
- 7/40 . . Type movable on carrier for impression
- 7/42 . . Timed impression, e.g. without impact
- 7/44 . . . with impact
- 7/46 . . Rolling contact during impression
- 7/48 . Type carrier arrested in selected position by electromagnetic means
- 7/50 . Type-face selected by combinations of two movements of type carrier
- 7/52 . . by combined rotary and sliding movement
- 7/54 . Selecting arrangements including combinations, permutation, summation, or aggregation means
- 7/56 . . Summation devices for mechanical movements
- 7/58 . . . Wedges
- 7/60 . . . Levers
- 7/62 . . . Gearing
- 7/64 . . . Pulley and strand mechanism
- 7/66 . . Movable members, e.g. pins, displaceable according to a code
- 7/68 . . with means for selectively closing an electric circuit for type presentation
- 7/90 . Syllable, line, or like type selection
- 7/92 . Impact adjustment; Means to give uniformity of impression ([B41J 9/46](#), [B41J 9/48](#) take precedence)
- 7/94 . . Character-by-character adjustment
- 7/96 . Means checking correctness of setting
- 9/00 Hammer-impression mechanisms**
- 9/02 . Hammers; Arrangements thereof
- 9/04 . . of single hammers, e.g. travelling along printing line
- 9/06 . . . of stationary hammers, e.g. engaging a single type-carrier
- 9/08 engaging more than one type-carrier
- 9/10 . . of more than one hammer, e.g. one for each character position
- 9/12 . . . each operating in more than one character position
- 9/127 . . Mounting of hammers
- 9/133 . . Construction of hammer body or tip
- 9/14 . Means for selecting or suppressing individual hammers
- 9/16 . Means for cocking or resetting hammers
- 9/18 . . Cams
- 9/20 . . Springs
- 9/22 . . Fluid-pressure means
- 9/24 . . Electromagnetic means
- 9/26 . Means for operating hammers to effect impression
- 9/28 . . Cams
- 9/30 . . Springs
- 9/32 . . arranged to be clutched to snatch roll
- 9/34 . . Fluid-pressure means
- 9/36 . . in which mechanical power is applied under electromagnetic control
- 9/38 . . Electromagnetic means
- 9/40 . . including an electro-adhesive clutch
- 9/42 . with anti-rebound arrangements
- 9/44 . Control for hammer-impression mechanisms
- 9/46 . . for deciding or adjusting hammer-firing time
- 9/48 . . for deciding or adjusting hammer-drive energy

- 9/50 . . for compensating for the variations of printer drive conditions, e.g. for compensating for the variation of temperature or current supply
- 9/52 . . for checking the operation of print hammers
- 9/54 . . . for checking the breakage of print hammers
- 11/00 Devices or arrangements {of selective printing mechanisms, e.g. ink-jet printers or thermal printers,} for supporting or handling copy material in sheet or web form (script supports connected to the typewriter or printer [B41J 29/15](#))**
- 11/0005 . {Curl smoothing, i.e. smoothing down corrugated printing material, e.g. by pressing means acting on wrinkled printing material}
- 11/001 . {Handling wide copy materials}
- 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](#))}
- 11/002 . . {Curing or drying the ink on the copy materials, e.g. by heating or irradiating}
- 11/0021 . . . {using irradiation}
- 11/00212 {Controlling the irradiation means, e.g. image-based controlling of the irradiation zone or control of the duration or intensity of the irradiation}
- 11/00214 {using UV radiation}
- 11/00216 {using infrared [IR] radiation or microwaves}
- 11/00218 {Constructional details of the irradiation means, e.g. radiation source attached to reciprocating print head assembly or shutter means provided on the radiation source}
- 11/0022 . . . {using convection means, e.g. by using a fan for blowing or sucking air}
- 11/00222 {Controlling the convection means}
- 11/00224 {comprising movable shutters, e.g. for redirection of an air flow}
- 11/0024 . . . {using conduction means, e.g. by using a heated platen}
- 11/00242 {Controlling the temperature of the conduction means}
- 11/00244 {Means for heating the copy materials before or during printing}
- 11/0025 . {Handling copy materials differing in width}
- 11/003 . . {Paper-size detection, i.e. automatic detection of the length and/or width of copy material}
- 11/0035 . {Handling copy materials differing in thickness ([B41J 11/20 takes precedence](#))}
- 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}
- 11/0045 . {Guides for printing material ([curl smoothing B41J 11/0005](#); [platens B41J 11/02](#), [B41J 11/06](#); [guiding webs B41J 15/046](#))}
- 11/005 . . {Guides in the printing zone, e.g. guides for preventing contact of conveyed sheets with printhead}
- 11/0055 . . {Lateral guides, e.g. guides for preventing skewed conveyance of printing material}
- 11/006 . {Means for preventing paper jams or for facilitating their removal}
- 11/0065 . {Means for printing without leaving a margin on at least one edge of the copy material, e.g. edge-to-edge printing}
- 11/007 . {Conveyor belts or like feeding devices}
- 11/0075 . {Low-paper indication, i.e. indicating the state when copy material has been used up nearly or completely}
- 11/008 . {Controlling printhead for accurately positioning print image on printing material, e.g. with the intention to control the width of margins}
- 11/0085 . {Using suction for maintaining printing material flat ([on rotatable drums B41J 13/226](#))}
- 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}
- 11/0095 . {Detecting means for copy material, e.g. for detecting or sensing presence of copy material or its leading or trailing end}
- 11/02 . Platens
- 11/04 . . Roller platens
- 11/053 . . . with sound-deadening devices ([structure of surface B41J 11/057](#))
- 11/057 Structure of the surface
- 11/06 . . Flat page-size platens {or smaller flat platens having a greater size than line-size platens ([B41J 11/0085 takes precedence](#))}
- 11/08 . . Bar or like line-size platens
- 11/10 . . Anvil or like character-size platens
- 11/13 . . Backings or blankets ([for roller platens B41J 11/057](#))
- 11/14 . . Platen-shift mechanisms; Driving gear therefor
- 11/16 . . with balancing means
- 11/18 . Platen-impression arrangements
- 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](#)}
- 11/22 . Paper-carriage guides or races
- 11/24 . Detents, brakes, or couplings for feed rollers or platens
- 11/26 . Pin feeds
- 11/27 . . on or within the platen-rollers
- 11/28 . . Pin wheels
- 11/30 . . Pin traction elements other than wheels, e.g. pins on endless bands
- 11/32 . . Adjustment of pin wheels or traction elements, e.g. laterally
- 11/34 . . Guides coating with pin feeds
- 11/36 . Blanking or long feeds; Feeding to a particular line, e.g. by rotation of platen or feed roller
- 11/38 . . Manually-operated feeding devices
- 11/40 . . specially adapted for printing musical scores
- 11/42 . . Controlling {printing material conveyance for accurate alignment of the printing material with the printhead; [Print registering](#)}
- 11/425 . . . {for a variable printing material feed amount}
- 11/44 . . . by devices, e.g. programme tape or contact wheel, moved in correspondence with movement of paper-feeding devices, e.g. platen rotation
- 11/46 . . . by marks or formations on the paper being fed

- 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)}
- 11/485 . . {Means for selecting a type of copy material amongst different types of copy material in the printing apparatus}
- 11/50 . . in which two or more papers or sets are separately fed in the same direction towards the printing position
- 11/51 . . . with different feed rates
- 11/52 . . in which one paper or set is moved transversely relative to another
- 11/53 . . . Devices for holding in place one paper or set during replacement of one or more of the auxiliary papers or sets
- 11/54 . . in which one paper or set is fed towards printing position from the front of the apparatus
- 11/55 . . . with means for adjusting a paper or set
- 11/56 . specially constructed to facilitate storage or transport of typewriter
- 11/58 . Supply holders for sheets or fan-folded webs, e.g. shelves, tables, scrolls, pile holders
- 11/60 . Erasing or correcting tables
- 11/62 . Shields or masks
- 11/64 . Applications of scales or indicators
- 11/66 . Applications of cutting devices
- 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}
- 11/666 . . {Cutting partly, e.g. cutting only the uppermost layer of a multiple-layer printing material}
- 11/68 . . cutting parallel to the direction of paper feed
- 11/70 . . cutting perpendicular to the direction of paper feed
- 11/703 . . . {Cutting of tape}
- 11/706 . . . {using a cutting tool mounted on a reciprocating carrier}
- 13/00 Devices or arrangements {of selective printing mechanisms, e.g. ink-jet printers or thermal printers,} specially adapted for supporting or handling copy material in short lengths, e.g. sheets**
- 13/0009 . {control of the transport of the copy material}
- 13/0018 . . {in the sheet input section of automatic paper handling systems}
- 13/0027 . . {in the printing section of automatic paper handling systems}
- 13/0036 . . {in the output section of automatic paper handling systems}
- 13/0045 . . {concerning sheet refeed sections of automatic paper handling systems, e.g. intermediate stackers (printing on both faces B41J 3/60)}
- 13/0054 . {Handling sheets of differing lengths}
- 13/0063 . {Handling thick cut sheets, e.g. greeting cards or postcards, larger than credit cards, e.g. using means for enabling or facilitating the conveyance of thick sheets (B41J 11/20, B41J 13/12 take precedence)}
- 13/0072 . {Handling wide cut sheets, e.g. using means for enabling or facilitating the conveyance of wide sheets}
- 13/0081 . {Sheet-storing packages, e.g. for protecting the sheets against ambient influences, e.g. light, humidity, changes in temperature}
- 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}
- 13/02 . Rollers (roller platens B41J 11/04)
- 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}
- 13/03 . . driven, e.g. feed rollers separate from platen
- 13/036 . . co-operating with a roller platen
- 13/042 . . . Front and rear rollers or sets of front or rear rollers each mounted on a separate carrier
- 13/048 . . . Front and rear rollers both mounted on a common carrier
- 13/054 on the paper apron concentric with the roller platen
- 13/076 . . Construction of rollers; Bearings therefor
- 13/08 . {Conveyor} bands or like feeding devices
- 13/10 . Sheet holders, retainers {, movable guides}, or stationary guides
- 13/103 . . {for the sheet feeding section}
- 13/106 . . {for the sheet output section}
- 13/12 . . specially adapted for {small} cards, envelopes, or the like {, e.g. credit cards, cut visiting cards}
- 13/14 . . Aprons or guides {for the printing section}
- 13/16 . . . movable for insertion or release of sheets
- 13/18 . . . concentric with roller platen
- 13/20 . . Bails
- 13/22 . . Clamps or grippers
- 13/223 . . . {on rotatable drums}
- 13/226 {using suction}
- 13/24 . . Strips for supporting or holding papers
- 13/26 . Registering devices
- 13/28 . . Front lays, stops, or gauges
- 13/30 . . Side lays or gauges
- 13/32 . . Means for positioning sheets in two directions under one control, e.g. for format control or orthogonal sheet positioning
- 15/00 Devices or arrangements {of selective printing mechanisms, e.g. ink-jet printers or thermal printers,} specially adapted for supporting or handling copy material in continuous form, e.g. webs**
- 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)}
- 15/02 . Web rolls or spindles; Attaching webs to cores or spindles
- 15/04 . Supporting, feeding, or guiding devices; Mountings for web rolls or spindles

- 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}
- 15/044 . . {Cassettes or cartridges containing continuous copy material, tape, for setting into printing devices}
- 15/046 . . {for the guidance of continuous copy material, e.g. for preventing skewed conveyance of the continuous copy material}
- 15/048 . . {Conveyor belts or like feeding devices (B41J 11/007 takes precedence)}
- 15/06 . . characterised by being applied to printers having stationary carriages
- 15/08 . . characterised by being applied to printers having transversely- moving carriages
- 15/10 . . . and mounted on the carriage
- 15/12 . . . and coupled to the carriage
- 15/14 . . . and detached from the carriage
- 15/16 . Means for tensioning or winding the web
- 15/165 . . {for tensioning continuous copy material by use of redirecting rollers or redirecting nonrevolving guides}
- 15/18 . Multiple web-feeding apparatus
- 15/20 . . for webs superimposed during printing
- 15/22 . . for feeding webs in separate paths during printing
- 15/24 . . with means for registering the webs with each other
- 17/00 Mechanisms for manipulating page-width impression-transfer material, e.g. carbon paper (in manifolding devices B41L)**
- 17/02 . Feeding mechanisms
- 17/04 . . Feed dependent on the record-paper feed, e.g. both moved at the same time
- 17/06 . . . "Creep" feed, i.e. impression-transfer material fed slower than the record paper
- 17/07 . . . electromagnetically controlled
- 17/08 . . Feed independent of the record-paper feed
- 17/10 . . . electromagnetically controlled
- 17/12 . . Special adaptations for ensuring maximum life
- 17/14 . . Automatic arrangements for reversing the feed direction
- 17/16 . Holders in the machine for sheets of impression transfer material
- 17/18 . . pivotable to and from the platen
- 17/20 . . slidable to and from the platen
- 17/22 . Supply arrangements for webs of impression-transfer material
- 17/24 . . Webs supplied from reels or spools attached to the machine
- 17/26 . . Webs supplied from trays or like supports attached to the machines
- 17/28 . Arrangements of guides for the impression-transfer material
- 17/30 . Constructions of guides for the impression-transfer material
- 17/32 . Detachable carriers or holders for impression-transfer material mechanism
- 17/34 . Backings for impression-transfer material, e.g. sheets for reducing friction, shields for preventing imprint
- 17/36 . Alarms, indicators, or feed-disabling devices responsible to material breakage or exhaustion
- 17/38 . for dealing with the impression-transfer material after use
- 17/40 . . for retracting sheets for re-use
- 17/42 . . for webs
- 19/00 Character- or line-spacing mechanisms**
- 19/005 . {Cable or belt constructions for driving print, type or paper-carriages, e.g. attachment, tensioning means}
- 19/02 . with retarding devices, e.g. brakes
- 19/04 . Sound-deadening or shock-absorbing devices or measures therein (B41J 19/38 takes precedence)
- 19/06 . . Resilient mounting of mechanism
- 19/08 . . Buffers, springs or like carriage stops
- 19/10 . . Dash-pots
- 19/12 . . Gearing made of special material or specially constructed to reduce sound or shock
- 19/14 . with means for effecting line or character spacing in either direction
- 19/142 . . {with a reciprocating print head printing in both directions across the paper width}
- 19/145 . . . {Dot misalignment correction}
- 19/147 . . . {Colour shift prevention}
- 19/16 . Special spacing mechanisms for circular, spiral, or diagonal-printing apparatus
- 19/18 . Character-spacing or back-spacing mechanisms; Carriage return or release devices therefor
- 19/20 . . Positive-feed character-spacing mechanisms (controlled by escapements B41J 19/52)
- 19/202 . . . {Drive control means for carriage movement}
- 19/205 {Position or speed detectors therefor}
- 19/207 {Encoding along a bar}
- 19/22 . . . acting by friction or gripping effect
- 19/24 . . . Pawl and ratchet
- 19/26 moving a paper or like carriage
- 19/28 moving a paper or like web or strip, e.g. over a stationary support
- 19/30 . . . Electromagnetically-operated mechanisms
- 19/305 {Linear drive mechanisms for carriage movement}
- 19/32 . . . Differential or variable-spacing arrangements
- 19/34 . . Escapement-feed character-spacing mechanisms
- 19/36 . . . Driving mechanisms, e.g. springs stressed during carriage return
- 19/38 adapted for silent return
- 19/40 . . . Escapements having a single pawl or like detent
- 19/42 . . . Escapements having two pawls or like detents
- 19/44 coacting with two toothed members, e.g. racks or wheels
- 19/46 and mounted on a single rocker
- 19/48 and mounted on a single slider
- 19/50 . . . Electromagnetically-controlled escapements
- 19/52 . . . Escapements controlling positive-feed mechanism
- 19/54 . . . Construction of universal bars
- 19/56 . . . Escapements controlling web or strip feed
- 19/58 . . . Differential or variable-spacing arrangements
- 19/60 . . Auxiliary feed or adjustment devices
- 19/62 . . . for back spacing
- 19/64 . . . for justifying

19/66	. . Carriage-release mechanisms	23/22	. . for key or like type selection
19/68	. . Carriage-return mechanisms, e.g. manually actuated	23/24	. . for impression mechanisms
19/70	. . . power driven	23/26	. . for platen or carriage movements, e.g. for line spacing, letter spacing, or carriage return
19/72	. . . with power stored during character spacing	23/28	. . for type-carriage movements
19/74	. . with special means to maintain character-spacing or back-spacing elements in engagement during case-shift or like movement	23/30	. . for case shift
19/76	. Line-spacing mechanisms (special line-feeds , e.g. long feeds B41J 11/36)	23/32	. Electromagnetic power drives, e.g. applied to key levers
19/78	. . Positive-feed mechanisms	23/34	. . applied to elements other than key levers
19/80	. . . Pawl-and-ratchet mechanisms	23/36	. . . and acting on type members
19/82	. . . . moving a paper or like carriage	23/38	. . . and acting on aligning or case-shift mechanisms
19/84	. . . . . in the form of a roller rotated for line spacing	25/00	Actions or mechanisms not otherwise provided for
19/86	. . . . . the pawl being normally in engagement with the ratchet	25/001	. {Mechanisms for bodily moving print heads or carriages parallel to the paper surface}
19/88	. . . . moving a type carriage	25/003	. . {for changing the angle between a print element array axis and the printing line, e.g. for dot density changes}
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	25/005	. . {for serial printing movements superimposed to character- or line-spacing movements}
19/92	. . . Electromagnetically-operated mechanisms	25/006	. . {for oscillating, e.g. page-width print heads provided with counter-balancing means or shock absorbers}
19/94	. . . automatically operated in response to carriage return	2025/008	. {comprising a plurality of print heads placed around a drum}
19/96	. . . Variable-spacing arrangements	25/02	. Key actions for specified purposes
19/98	. . Escapement-feed mechanisms	25/04	. . Back spacing
21/00	Column, tabular or like printing arrangements; Means for centralising short lines (carriage-release mechanisms B41J 19/66)	25/06	. . Carriage return
21/02	. Stops or stop-racks	25/08	. . Case shift
21/04	. Mechanisms for setting or restoring tabulation stops	25/10	. . Ink-ribbon adjustment
21/06	. with means for preventing rebound from stops	25/12	. . Character spacing
21/08	. Mechanisms for initiating, effecting, skipping, or stopping tabulation movement; Means for centralising short lines	25/14	. . Line spacing
21/10	. with central, counter, or equivalent stop projected into path of tabulation stops	25/16	. . Line spacing and carriage return by a single key
21/12	. characterised by arrangements of electrical contacts	25/18	. . Tabulating
21/14	. characterised by denominational arrangements	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
21/16	. controlled by the sensing of marks or formations on the paper being typed, an undersheet, or the platen	25/22	. for aligning characters for impression
21/17	. controlled by stored information	25/24	. Case-shift mechanisms; Fount-change arrangements
21/18	. characterised by applications of scales or indicators	25/304	. Bodily-movable mechanisms for print heads or carriages movable towards or from paper surface
23/00	Power drives for actions or mechanisms (B41J 9/00 {, B41J 19/305} take precedence)	25/308	. . with print gap adjustment mechanisms
23/02	. Mechanical power drives	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}
23/025	. . {using a single or common power source for two or more functions}	25/3084	. . . . {by means of a spacer contacting the matter to be printed}
23/04	. . with driven mechanism arranged to be clutched to continuously- operating power source	25/3086	. . . {with print gap adjustment means between the print head and its carriage}
23/06	. . . by snatch rolls	25/3088	. . . {with print gap adjustment means on the printer frame, e.g. for rotation of an eccentric carriage guide shaft}
23/08	. . . by one-revolution or part-revolution clutches	25/312	. . with print pressure adjustment mechanisms, e.g. pressure-on-the paper mechanisms
23/10	. . . and arrested in selected position	25/316	. . with tilting motion mechanisms relative to paper surface
23/12	. . Mechanism driven by cams engaging rotating roller	25/32	. Impression mechanisms in which a roller co-operates with stationary type-faces
23/14	. . Mechanism driven by through an oscillating or reciprocating member	25/34	. Bodily-changeable print heads or carriages
23/16	. . Mechanisms driven by a spring tensioned by power means	27/00	Inking apparatus
23/18	. . Continuously-cycling drives		
23/20	. Fluid-pressure power drives		

27/02	. with ink applied by pads or rotary discs	2029/3935	. . . {by means of printed test patterns}
27/04	. . Pads or discs; Ink supply arrangements therefor	2029/3937	. . . {Wireless communication between the printer and the cartridge, carriage or printhead}
27/06	. . Arrangements to ensure maximum life of pads or discs	29/40	. Means for printing fixed, i.e. unchanging, matter in addition to selectable matter
27/08	. . Arrangements for multicolour work	29/42	. Scales and indicators, e.g. for determining side margins
27/10	. with ink applied by rollers; Ink supply arrangements therefor	29/44	. . for determining top and bottom margins or indicating exhaust of paper
27/12	. . Rollers	29/46	. Applications of alarms, e.g. responsive to approach of end of line
27/14	. . Arrangements for multicolour work	29/48	. . responsive to breakage or exhaustion of paper or approach of bottom of paper
27/16	. with ink deposited electrostatically or electromagnetically, e.g. powdered ink	29/50	. Side-stop mechanisms
27/18	. . with liquid ink deposited	29/52	. Top-and-bottom stop mechanisms
27/20	. with ink supplied by capillary action, e.g. through porous type members, through porous platens	29/54	. Locking devices applied to printing mechanisms
27/22	. with inking discs or sectors	29/56	. . and manually actuated
29/00	Details of, or accessories for, typewriters or selective printing mechanisms not otherwise provided for	29/58	. . and automatically actuated
29/02	. Framework	29/60	. . . in response to failure of power supply
29/023	. . {with reduced dimensions}	29/62	. . . by the absence of paper to lock hammer mechanism
29/026	. . {Stackable}	29/64	. . . by a function of the printer to lock the keyboard
29/04	. Means for attaching machines to baseboards	29/66	. . . . Locking devices actuated when platen reaches the end of a line
29/06	. Special supports, platforms or trolleys for supporting machines on tables	29/68	. . . by completion of a page or predetermined number of lines or exhaustion of paper to lock the keyboard
29/08	. Sound-deadening, or shock-absorbing stands, supports, cases or pads separate from machines	29/70	. . . Interlocks between any two-carriage-moving mechanisms, e.g. character-space, back space, tabulation, carriage return or carriage- release mechanisms
29/10	. Sound-deadening devices embodied in machines		
29/12	. Guards, shields or dust excluders		
29/13	. . Cases or covers		
29/14	. Attachments operated by the leg, e.g. the foot, the knee		
29/15	. Script supports connected to the typewriter or printer		
29/16	. Auxiliary receptacles for articles, e.g. erasers, pencils		
29/17	. Cleaning arrangements		
29/18	. Mechanisms for rendering the print visible to the operator		
29/19	. . with reflectors or illuminating devices		
29/20	. Arrangements of counting devices		
29/22	. . Line counters		
29/24	. . Word counters		
29/26	. Devices, non-fluid media or methods for cancelling, correcting errors, underscoring or ruling		
29/28	. . Writing or like instruments in holders or guides		
29/30	. . Wheels		
29/32	. . Type members		
29/34	. . . repeatedly actuated		
29/36	. . for cancelling or correcting errors by overprinting		
29/367	. . . sheet media carrying a pigmented transferable correction layer		
29/373	. . . sheet media bearing an adhesive layer effective to lift off wrongly typed characters		
29/377	. Cooling or ventilating arrangements		
29/38	. Drives, motors, controls or automatic cut-off devices for the entire printing mechanism		
29/387	. . Automatic cut-off devices		
29/393	. . Devices for controlling or analysing the entire machine {; Controlling or analysing mechanical parameters involving printing of test patterns}		
2029/3932	. . . {Battery or power source mounted on the carriage}		
		29/40	Ink ribbons; Ink-ribbon mechanisms
		31/00	Ink ribbons; Renovating or testing ink ribbons
		31/02	. Ink ribbons characterised by the material from which they are woven
		31/04	. . woven from synthetic material
		31/05	. Ink ribbons having coatings other than impression-material coatings
		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
		31/08	. . the coatings being superimposed on impression-transfer material
		31/09	. Ink ribbons characterised by areas carrying media for obliteration or removal of typing errors
		31/10	. Ink ribbons having arrangements to facilitate threading through a machine
		31/12	. Ink ribbons having arrangements to prevent undesired contact between the impression-transfer material and machine parts or other articles
		31/14	. Renovating or testing ink ribbons
		31/16	. . while fitted in the machine using the ink ribbons
		32/00	Ink-ribbon cartridges
		32/02	. for endless ribbons
		33/00	Apparatus or arrangements for feeding ink ribbons or like character-size impression-transfer material
		33/003	. {Ribbon spools}
		33/006	. . {Arrangements to attach the ribbon to the spool}
		33/02	. Ribbon arrangements

- 33/04 . . mounted on moving carriages
 - 33/06 . . Ribbons associated, but not moving, with typewriter platens, e.g. extending transversely to the length of the platen
 - 33/08 . . . and extending parallel to the length of the platen
 - 33/10 . . Arrangements of endless ribbons
 - 33/12 . . Ribbons carried by coaxially-mounted spools
 - 33/14 . Ribbon-feed devices or mechanisms
 - 33/16 . . with drive applied to spool or spool spindle
 - 33/18 . . . by ratchet mechanism ([B41J 33/30 takes precedence](#))
 - 33/20 . . . by friction
 - 33/22 . . . by gears or pulleys
 - 33/24 . . with drive applied directly to ribbon
 - 33/26 . . . by rollers engaging the ribbon
 - 33/28 . . . by mechanism pulling or gripping the ribbon
 - 33/30 . . Escapement mechanisms
 - 33/32 . . Electromagnetic devices
 - 33/34 . . driven by motors independently of the machine as a whole
 - 33/36 . . with means for adjusting feeding rate
 - 33/38 . . Slow, e.g. "creep", feed mechanisms
 - 33/382 . . . the ribbon being fed only during carriage return
 - 33/384 and attached to the carriage during writing
 - 33/386 . . . the ribbon being fed only by operation of the line spacing mechanism
 - 33/388 . . . the ribbon being fed only when type impression takes place
 - 33/40 . . with arrangements for reversing the feed direction
 - 33/42 . . . manually
 - 33/44 . . . automatically
 - 33/46 and characterised by its application to mechanism in which two spools are driven by pawl-and-ratchet mechanism
 - 33/48 comprising two pawls and ratchets, one for each spool
 - 33/50 comprising a single pawl or integral double-tooth pawl selectively engageable with two ratchets, one for each spool
 - 33/51 and characterised by the use of particular reversing control means
 - 33/512 using a pivoted reversing-feeler engaging the external periphery of the wound ribbon
 - 33/514 using a pivoted reversing-feeler engaging the interior of the wound ribbon
 - 33/516 using a reversing-feeler responsive to the tension of the ribbon
 - 33/518 the reversing-feeler engaging buttons or the like secured to the ribbon near its ends
 - 33/52 . . Braking devices therefor
 - 33/54 . . for ensuring maximum life of the ribbon ([B41J 33/38 takes precedence](#))
 - 33/56 . . . Ribbon adjusted transversely
 - 33/58 . . . Ribbon fed angularly
 - 33/60 . . responsive to telegraph code or other extraneous signals
 - 35/00 Other apparatus or arrangements associated with, or incorporated in, ink-ribbon mechanisms**
 - 35/02 . Frames or holders for unwound short lengths of ink ribbons
 - 35/03 . . the holder being movable to inoperative position, e.g. by swinging upwardly
 - 35/04 . Ink-ribbon guides
 - 35/06 . . stationary
 - 35/08 . . with tensioning arrangements
 - 35/10 . . Vibrator mechanisms; Driving gear therefor
 - 35/12 . . . adjustable, e.g. for case shift
 - 35/14 for multicolour work; for ensuring maximum life of ink ribbon; for rendering ink-ribbon inoperative
 - 35/16 . Multicolour arrangements
 - 35/18 . . Colour change effected automatically
 - 35/20 . Ink-ribbon shifts, e.g. for exposing print, for case-shift adjustment, for rendering ink ribbon inoperative
 - 35/22 . Mechanisms permitting the selective use of a plurality of ink ribbons
 - 35/23 . . with two or more ribbon guides
 - 35/24 . Mechanisms specially adapted for feeding impression-transfer materials of foil form
 - 35/26 . Ink-ribbon shields or backings
 - 35/28 . Detachable carriers or holders for ink-ribbon mechanisms
 - 35/30 . Manifolding or like arrangements
 - 35/32 . . for producing a plurality of copies along the printing line by a single ink ribbon
 - 35/34 . . using a plurality of separate ink ribbons, e.g. including one hectographic ink ribbon
 - 35/35 . . using unwound short lengths of ink ribbons
 - 35/36 . Alarms, indicators, or feed disabling devices responsive to ink ribbon breakage or exhaustion
 - 35/38 . Feeding the ink ribbon to waste after use
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- 2202/00 Embodiments of or processes related to ink-jet or thermal heads**
 - 2202/01 . Embodiments of or processes related to ink-jet heads
 - 2202/02 . . Air-assisted ejection
 - 2202/03 . . Specific materials used
 - 2202/04 . . Heads using conductive ink
 - 2202/05 . . Heads having a valve
 - 2202/06 . . Heads merging droplets coming from the same nozzle
 - 2202/07 . . dealing with air bubbles
 - 2202/08 . . dealing with thermal variations, e.g. cooling
 - 2202/09 . . Ink jet technology used for manufacturing optical filters
 - 2202/10 . . Finger type piezoelectric elements
 - 2202/11 . . characterised by specific geometrical characteristics
 - 2202/12 . . with ink circulating through the whole print head
 - 2202/13 . . Heads having an integrated circuit
 - 2202/14 . . Mounting head into the printer
 - 2202/15 . . Moving nozzle or nozzle plate
 - 2202/16 . . Nozzle heaters
 - 2202/17 . . Readable information on the head
 - 2202/18 . . Electrical connection established using vias
 - 2202/19 . . Assembling head units
 - 2202/20 . . Modules
 - 2202/21 . . Line printing
 - 2202/22 . . Manufacturing print heads
 - 2202/30 . Embodiments of or processes related to thermal heads

B41J

- 2202/31 . . Thermal printer with head or platen movable
- 2202/32 . . Thermal head for perforating stencil
- 2202/33 . . Thermal printer with pre-coating or post-coating ribbon system
- 2202/34 . . Thermal printer with pre-coating or post-processing
- 2202/35 . . Thermal printing on id card
- 2202/36 . . Thermal printing on disk-shaped medium
- 2202/37 . . Writing and erasing thermal head
- 2202/38 . . Test pattern thermal printing
- 2202/50 . Embodiments of processes related to optical heads
- 2203/00 Embodiments of or processes related to the control of the printing process**
- 2203/01 . Inspecting a printed medium or a medium to be printed using a sensing device
- 2203/011 . . Inspecting the shape or condition, e.g. wrinkled or warped, of a medium to be printed before printing on it