

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.

WARNING

{In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}

Kinds of typewriters or of selective printing mechanisms

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

1/52	. . . . .	with copy material moving in the letter-space direction, and the carrier mounting being fixed relative to the machine	2/04	. . . . .	generating single droplets or particles on demand
1/54	. . . . .	Types or dies movable on wheel, drum, cylinder or like carriers	2002/041	. . . . .	{Electromagnetic transducer}
1/56	. . . . .	Types or dies on shuttles or like loose carriers	2002/043	. . . . .	{Electrostatic transducer}
1/58	. . . . .	Types or dies upon arcuate bars	2/045	. . . . .	by pressure, e.g. electromechanical transducers
1/60	. . . . .	with types or dies on spherical, truncated-spherical, or like surfaces	2/04501	. . . . .	{Control methods or devices therefor, e.g. driver circuits, control circuits}
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)	2/04503	. . . . .	{aiming at compensating carriage speed}
		NOTES	2/04505	. . . . .	{aiming at correcting alignment}
		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.	2/04506	. . . . .	{aiming at correcting manufacturing tolerances}
		2. In this group, the following expressions are used with the meanings indicated:	2/04508	. . . . .	{aiming at correcting other parameters}
		• "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	2/0451	. . . . .	{for detecting failure, e.g. clogging, malfunctioning actuator}
		• "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	2/04511	. . . . .	{for electrostatic discharge protection}
		• "ink spray" means a spray of ink transported by a stream of charged particles or air on to the printing material	2/04513	. . . . .	{for increasing lifetime}
			2/04515	. . . . .	{preventing overheating}
			2/04516	. . . . .	{preventing formation of satellite drops}
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)	2/04518	. . . . .	{reducing costs}
2002/0052	. . . . .	{Control methods or devices for non ink jet heads}	2/0452	. . . . .	{reducing demand in current or voltage}
2002/0055	. . . . .	{Heating elements adjacent to nozzle orifices of printhead for warming up ink menisci, e.g. for lowering the surface tension of the ink menisci}	2/04521	. . . . .	{reducing number of signal lines needed}
2/0057	. . . . .	{where an intermediate transfer member receives the ink before transferring it on the printing material}	2/04523	. . . . .	{reducing size of the apparatus}
2/01	. . . . .	Ink jet	2/04525	. . . . .	{reducing occurrence of cross talk}
2002/012	. . . . .	{with intermediate transfer member}	2/04526	. . . . .	{controlling trajectory}
2/015	. . . . .	characterised by the jet generation process (B41J 2/215 takes precedence)	2/04528	. . . . .	{aiming at warming up the head}
2/02	. . . . .	generating a continuous ink jet	2/0453	. . . . .	{controlling a head having a dummy chamber}
2002/022	. . . . .	{Control methods or devices for continuous ink jet}	2/04531	. . . . .	{controlling a head having a heater in the manifold}
2/025	. . . . .	by vibration	2/04533	. . . . .	{controlling a head having several actuators per chamber}
2/03	. . . . .	by pressure	2/04535	. . . . .	{involving calculation of drop size, weight or volume}
2002/031	. . . . .	{Gas flow deflection}	2/04536	. . . . .	{using history data}
2002/032	. . . . .	{Deflection by heater around the nozzle}	2/04538	. . . . .	{involving calculation of heater resistance}
2002/033	. . . . .	{Continuous stream with droplets of different sizes}	2/0454	. . . . .	{involving calculation of temperature}
2/035	. . . . .	by electric or magnetic field	2/04541	. . . . .	{Specific driving circuit}
			2/04543	. . . . .	{Block driving}
			2/04545	. . . . .	{Dynamic block driving}
			2/04546	. . . . .	{Multiplexing}
			2/04548	. . . . .	{Details of power line section of control circuit}
			2/0455	. . . . .	{Details of switching sections of circuit, e.g. transistors}
			2/04551	. . . . .	{using several operating modes}
			2/04553	. . . . .	{detecting ambient temperature}
			2/04555	. . . . .	{detecting current}
			2/04556	. . . . .	{detecting distance to paper}
			2/04558	. . . . .	{detecting presence or properties of a dot on paper}
			2/0456	. . . . .	{detecting drop size, volume or weight}
			2/04561	. . . . .	{detecting presence or properties of a drop in flight}

2/04563	. . . . .	{detecting head temperature; Ink temperature}	2/085	. . . . .	Charge means, e.g. electrodes
2/04565	. . . . .	{detecting heater resistance}	2/09	. . . . .	Deflection means
2/04566	. . . . .	{detecting humidity}	2/095	. . . . .	electric field-control type
2/04568	. . . . .	{Control according to number of actuators used simultaneously}	2/10	. . . . .	magnetic field-control type
2/0457	. . . . .	{Power supply level being detected or varied}	2/105	. . . . .	for binary-valued deflection
2/04571	. . . . .	{detecting viscosity}	2/11	. . . . .	for ink spray
2/04573	. . . . .	{Timing; Delays}	2/115	. . . . .	synchronising the droplet separation and charging time
2/04575	. . . . .	{controlling heads of acoustic type}	2/12	. . . . .	testing or correcting charge or deflection
2/04576	. . . . .	{controlling heads of electrostatic type}	2/125	. . . . .	Sensors, e.g. deflection sensors
2/04578	. . . . .	{controlling heads based on electrostatically-actuated membranes}	2/13	. . . . .	for inclination of printed pattern
2/0458	. . . . .	{controlling heads based on heating elements forming bubbles}	2/135	. . . . .	Nozzles
2/04581	. . . . .	{controlling heads based on piezoelectric elements}	2/14	. . . . .	Structure thereof {only for on-demand ink jet heads}
2/04583	. . . . .	{controlling heads based on discharge by lowering the surface tension of meniscus}	2/14008	. . . . .	{Structure of acoustic ink jet print heads}
2/04585	. . . . .	{controlling heads based on thermal bent actuators}	2/14016	. . . . .	{Structure of bubble jet print heads}
2/04586	. . . . .	{controlling heads of a type not covered by groups B41J 2/04575 - B41J 2/04585 , or of an undefined type}	2/14024	. . . . .	{Assembling head parts}
2/04588	. . . . .	{using a specific waveform}	2/14032	. . . . .	{Structure of the pressure chamber}
2/0459	. . . . .	{Height of the driving signal being adjusted}	2/1404	. . . . .	{Geometrical characteristics}
2/04591	. . . . .	{Width of the driving signal being adjusted}	2/14048	. . . . .	{Movable member in the chamber}
2/04593	. . . . .	{Dot-size modulation by changing the size of the drop}	2/14056	. . . . .	{Plural heating elements per ink chamber}
2/04595	. . . . .	{Dot-size modulation by changing the number of drops per dot}	2/14064	. . . . .	{Heater chamber separated from ink chamber by a membrane}
2/04596	. . . . .	{Non-ejecting pulses}	2/14072	. . . . .	{Electrical connections, e.g. details on electrodes, connecting the chip to the outside...}
2/04598	. . . . .	{Pre-pulse}	2/1408	. . . . .	{Structure dealing with thermal variations, e.g. cooling device, thermal coefficients of materials}
2/05	. . . . .	produced by the application of heat	2/14088	. . . . .	{Structure of heating means}
2/055	. . . . .	Devices for absorbing or preventing back-pressure	2/14096	. . . . .	{Current flowing through the ink}
2/06	. . . . .	by electric or magnetic field	2/14104	. . . . .	{Laser or electron beam heating the ink}
2002/061	. . . . .	{Ejection by electric field of ink or of toner particles contained in ink}	2/14112	. . . . .	{Resistive element}
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}	2/1412	. . . . .	{Shape}
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}	2/14129	. . . . .	{Layer structure}
2/065	. . . . .	involving the preliminary making of ink protuberances	2/14137	. . . . .	{Resistor surrounding the nozzle opening}
2/07	. . . . .	characterised by jet control (B41J 2/205 takes precedence)	2/14145	. . . . .	{Structure of the manifold}
2/072	. . . . .	{by thermal compensation}	2/14153	. . . . .	{Structures including a sensor}
2/075	. . . . .	for many-valued deflection	2/14161	. . . . .	{Structure having belt or drum with holes filled with ink}
2/08	. . . . .	charge-control type	2002/14169	. . . . .	{Bubble vented to the ambience}
			2002/14177	. . . . .	{Segmented heater}
			2002/14185	. . . . .	{characterised by the position of the heater and the nozzle}
			2002/14193	. . . . .	{movable member in the ink chamber (for bubble jet B41J 2/14048)}
			2/14201	. . . . .	{Structure of print heads with piezoelectric elements}
			2/14209	. . . . .	{of finger type, chamber walls consisting integrally of piezoelectric material}
			2002/14217	. . . . .	{Multi layer finger type piezoelectric element}
			2002/14225	. . . . .	{Finger type piezoelectric element on only one side of the chamber}
			2/14233	. . . . .	{of film type, deformed by bending and disposed on a diaphragm}
			2002/14241	. . . . .	{having a cover around the piezoelectric thin film element}

2002/1425	. . . . .	{Embedded thin film piezoelectric element}	2/1609	. . . . .	{of finger type, chamber walls consisting integrally of piezoelectric material}
2002/14258	. . . . .	{Multi layer thin film type piezoelectric element}	2/161	. . . . .	{of film type, deformed by bending and disposed on a diaphragm}
2002/14266	. . . . .	{Sheet-like thin film type piezoelectric element}	2/1612	. . . . .	{of stacked structure type, deformed by compression/extension and disposed on a diaphragm}
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 (for bubble jet B41J 2/14056)}	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 (for bubble jet B41J 2/14145)}	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	. . . . .	Preventing {or detecting} of nozzle clogging, e.g. cleaning, capping or moistening for nozzles
2002/14467	. . . . .	{Multiple feed channels per ink chamber}	2002/16502	. . . . .	{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 (for bubble jet B41J 2/14064)}	2/16508	. . . . .	{connected with the printer frame}
2002/14491	. . . . .	{Electrical connection (for bubble jet B41J 2/14072)}	2/16511	. . . . .	{Constructions for cap positioning (B41J 2/16547 takes precedence)}
2/145	. . . . .	Arrangement thereof	2002/16514	. . . . .	{creating a distance between cap and print head, e.g. for suction or pressurising}
2/15	. . . . .	for serial printing	2/16517	. . . . .	{Cleaning of print head nozzles (B41J 2/16505 , B41J 2/1707 , B41J 2/1714 take precedence)}
2/155	. . . . .	for line printing	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}
2/16	. . . . .	Production of nozzles	2/16523	. . . . .	{Waste ink collection from caps or spittoons, e.g. by suction}
2/1601	. . . . .	{Production of bubble jet print heads (B41J 2/1606 , B41J 2/162 take precedence)}	2/16526	. . . . .	{by applying pressure only}
2/1603	. . . . .	{of the front shooter type}	2002/16529	. . . . .	{Idle discharge on printing matter}
2/1604	. . . . .	{of the edge shooter type}	2/16532	. . . . .	{by applying vacuum only}
2/1606	. . . . .	{Coating the nozzle area or the ink chamber}	2/16535	. . . . .	{using wiping constructions (B41J 2/16552 takes precedence)}
2/1607	. . . . .	{Production of print heads with piezoelectric elements (B41J 2/1606 , B41J 2/162 take precedence)}	2/16538	. . . . .	{with brushes or wiper blades perpendicular to the nozzle plate}

2/16541	. . . . .	{Means to remove deposits from wipers or scrapers}	2/1753	. . . . .	{Details of contacts on the cartridge, e.g. protection of contacts}
2/16544	. . . . .	{Constructions for the positioning of wipers}	2/17533	. . . . .	{Storage or packaging of ink cartridges}
2/16547	. . . . .	{the wipers and caps or spittoons being on the same movable support}	2/17536	. . . . .	{Protection of cartridges or parts thereof, e.g. tape}
2002/1655	. . . . .	{with wiping surface parallel with nozzle plate and mounted on reels, e.g. cleaning ribbon cassettes}	2/1754	. . . . .	{with means attached to the cartridge, e.g. protective cap}
2/16552	. . . . .	{using cleaning fluids}	2/17543	. . . . .	{Cartridge presence detection or type identification}
2002/16555	. . . . .	{Air or gas for cleaning}	2/17546	. . . . .	{electronically}
2002/16558	. . . . .	{Using cleaning liquid for wet wiping}	2/1755	. . . . .	{mechanically}
2002/16561	. . . . .	{by an electrical field}	2/17553	. . . . .	{Outer structure}
2002/16564	. . . . .	{Heating means therefor, e.g. for hot melt inks}	2/17556	. . . . .	{Means for regulating the pressure in the cartridge}
2002/16567	. . . . .	{using ultrasonic or vibrating means}	2/17559	. . . . .	{Cartridge manufacturing}
2002/1657	. . . . .	{Cleaning of only nozzles or print head parts being selected}	2/17563	. . . . .	{Ink filters}
2002/16573	. . . . .	{Cleaning process logic, e.g. for determining type or order of cleaning processes}	2/17566	. . . . .	{Ink level or ink residue control}
2002/16576	. . . . .	{Cleaning means pushed or actuated by print head movement}	2002/17569	. . . . .	{based on the amount printed or to be printed}
2/16579	. . . . .	{Detection means therefor, e.g. for nozzle clogging}	2002/17573	. . . . .	{using optical means for ink level indication}
2002/16582	. . . . .	{Maintenance means fixed on the print head or its carriage}	2002/17576	. . . . .	{using a float for ink level indication}
2/16585	. . . . .	{for paper-width or non-reciprocating print heads}	2002/17579	. . . . .	{Measuring electrical impedance for ink level indication}
2/16588	. . . . .	{Print heads movable towards the cleaning unit}	2002/17583	. . . . .	{using vibration or ultra-sons for ink level indication}
2002/16591	. . . . .	{for line print heads above an endless belt}	2002/17586	. . . . .	{using ink bag deformation for ink level indication}
2002/16594	. . . . .	{Pumps or valves for cleaning}	2002/17589	. . . . .	{using ink level as input for printer mode selection or for prediction of remaining printing capacity}
2002/16597	. . . . .	{Pumps for idle discharge of liquid through nozzles}	2/17593	. . . . .	{Supplying ink in a solid state}
2/17	. . .	characterised by ink handling	2/17596	. . . . .	{Ink pumps, ink valves}
2/1707	. . . . .	{Conditioning of the inside of ink supply circuits, e.g. flushing during start-up or shut-down}	2/18	. . . . .	Ink recirculation systems
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)}	2/185	. . . . .	Ink-collectors; Ink-catchers
2/1721	. . . . .	{Collecting waste ink; Collectors therefor}	2002/1853	. . . . .	{ink collectors for continuous Inkjet printers, e.g. gutters, mist suction means}
2002/1728	. . . . .	{Closed waste ink collector}	2002/1856	. . . . .	{waste ink containers}
2002/1735	. . . . .	{Closed waste ink collector with ink supply tank in common container}	2/19	. . . . .	for removing air bubbles
2002/1742	. . . . .	{Open waste ink collector, e.g. ink receiving from a print head above the collector during borderless printing}	2/195	. . . . .	for monitoring ink quality
2/175	. . . . .	Ink supply systems {; Circuit parts therefor}	2/20	. . . . .	for preventing or detecting contamination of compounds
2/17503	. . . . .	{Ink cartridges}	2/205	. . . . .	for printing a discrete number of tones (B41J 2/21 takes precedence)
2/17506	. . . . .	{Refilling of the cartridge}	2/2052	. . . . .	{by dot superpositioning, e.g. multipass doubling}
2/17509	. . . . .	{Whilst mounted in the printer}	2/2054	. . . . .	{by the variation of dot disposition or characteristics, e.g. dot number density, dot shape}
2/17513	. . . . .	{Inner structure}	2/2056	. . . . .	{by ink density change}
2002/17516	. . . . .	{comprising a collapsible ink holder, e.g. a flexible bag}	2002/2058	. . . . .	{selecting different ink densities from one colour}
2/1752	. . . . .	{Mounting within the printer}	2/21	. . . . .	for multi-colour printing
2/17523	. . . . .	{Ink connection}	2/2103	. . . . .	{Features not dealing with the colouring process <u>per se</u> , e.g. construction of printers or heads, driving circuit adaptations}
2/17526	. . . . .	{Electrical contacts to the cartridge}	2/2107	. . . . .	{characterised by the ink properties}
			2/211	. . . . .	{Mixing of inks, solvent or air prior to paper contact}
			2/2114	. . . . .	{Ejecting transparent or white coloured liquids, e.g. processing liquids (B41J 2/211 takes precedence)}

- 2/2117 {Ejecting white liquids}
- 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}
- 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 (adjustments by bodily moving print heads or carriages [B41J 25/001](#))}
- 2/2139 {Compensation for malfunctioning nozzles creating dot place or dot size errors}
- 2/2142 {Detection of malfunctioning nozzles (for cleaning purposes [B41J 2/16579](#); jet deflection sensors [B41J 2/125](#))}
- 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 piezo-electric 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	2/512	. . . . {Adjustment of the dot disposition by adjustment of the arrangement of the dot printing elements of a print head, e.g. nozzles, needles}
2/451	. . . . {Special optical means therefor, e.g. lenses, mirrors, focusing means}	WARNING	
2002/453	. . . . {self-scanning}	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	
2/455	. . . using laser arrays {, the laser array being smaller than the medium to be recorded}	2/515	. . . line printer type
2/46	. . . characterised by using glass fibres	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)
2/465	. . using masks, e.g. light-switching masks	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
2/4655	. . . {using character templates}	3/00	Typewriters or selective printing or marking mechanisms characterised by the purpose for which they are constructed
2/47	. . using the combination of scanning and modulation of light	3/01	. for special character, e.g. for Chinese characters or barcodes
2/471	. . . {using dot sequential main scanning by means of a light deflector, e.g. a rotating polygonal mirror}	3/24	. for perforating or stencil cutting using special types or dies
2/473	. . . . {using multiple light beams, wavelengths or colours}	3/26	. for stenographic writing
2/475	. . for heating selectively {by radiation or ultrasonic waves}	3/28	. for printing downwardly on flat surfaces, e.g. of books, drawings, boxes {, envelopes, e.g. flat-bed ink-jet printers}
2/4753	. . . {using thermosensitive substrates, e.g. paper}	3/283	. . {on bank books or the like}
2002/4756	. . . . {Erasing by radiation}	3/286	. . {on boxes}
2/48	. . . melting ink on a film or melting ink granules	3/30	. for printing with large type, e.g. on bulletins, tickets
2/485	. characterised by the process of building-up characters {or image elements} applicable to two or more kinds of printing or marking processes	3/32	. for printing in Braille or with keyboards specially adapted for use by blind or disabled persons
2/49	. . by writing	3/34	. for printing musical scores
2/495	. . by selective printing from a rotating helical member	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)}
2/50	. . by the selective combination of two or more non-identical printing elements	3/365	. . {Toy typewriters (toy imitations of typewriters A63H 33/3077)}
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)}	3/37	. . Foldable typewriters
2/5052	. . . {with special adaptations characterised by the ink properties (B41J 2/2107 takes precedence)}	3/38	. for embossing, e.g. for making matrices for stereotypes
2/5054	. . . {with special adaptations characterised by dot size (B41J 2/2121 takes precedence)}	3/382	. . {of tapes, e.g. tape cartridges}
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)}	3/385	. . {of plates, e.g. metal plates, plastic cards}
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)}	3/387	. . . {with automatic plate transport systems, e.g. for credit cards}
2/51	. . . serial printer type	3/39	. . hand-held
		3/407	. for marking on special material {(apparatus or processes for manufacturing printed circuits by printing or dispensing a conductive paste or ink H05K 3/1241)}
		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}

- 3/4073 . . . {Printing on cylindrical or rotationally symmetrical objects, e. g. on bottles}
- 3/4075 . . {Tape printers; Label printers (tape cartridges [B41J 15/044](#))}
- 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](#))}
- 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](#))}
- 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)
- 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

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 (for computer use [G06F 3/023](#))}
- 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}
- 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 (control means for physically disabled persons in general [A61F 4/00](#))}
- 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	9/48	. . for deciding or adjusting hammer-drive energy
7/34	. Type-face selected by operation of rotary members	9/50	. . for compensating for the variations of printer drive conditions, e.g. for compensating for the variation of temperature or current supply
7/36	. Selecting arrangements applied to type-carriers rotating during impression		
7/38	. . Type movable on carrier for selection	9/52	. . for checking the operation of print hammers
7/40	. . Type movable on carrier for impression	9/54	. . . for checking the breakage of print hammers
7/42	. . Timed impression, e.g. without impact		
7/44	. . . with impact	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)
7/46	. . Rolling contact during impression		
7/48	. Type carrier arrested in selected position by electromagnetic means	11/0005	. {Curl smoothing, i.e. smoothing down corrugated printing material, e.g. by pressing means acting on wrinkled printing material}
7/50	. Type-face selected by combinations of two movements of type carrier	11/001	. {Handling wide copy materials}
7/52	. . by combined rotary and sliding movement	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)}
7/54	. Selecting arrangements including combinations, permutation, summation, or aggregation means		
7/56	. . Summation devices for mechanical movements	11/002	. . {Curing or drying the ink on the copy materials, e.g. by heating or irradiating}
7/58	. . . Wedges	11/0021	. . . {using irradiation}
7/60	. . . Levers	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}
7/62	. . . Gearing		
7/64	. . . Pulley and strand mechanism	11/00214	. . . . {using UV radiation}
7/66	. . Movable members, e.g. pins, displaceable according to a code	11/00216	. . . . {using infrared [IR] radiation or microwaves}
7/68	. . with means for selectively closing an electric circuit for type presentation	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}
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)	11/0022	. . . {using convection means, e.g. by using a fan for blowing or sucking air}
7/94	. . Character-by-character adjustment	11/00222	. . . . {Controlling the convection means}
7/96	. Means checking correctness of setting	11/00224	. . . . {comprising movable shutters, e.g. for redirection of an air flow}
9/00	Hammer-impression mechanisms	11/0024	. . . {using conduction means, e.g. by using a heated platen}
9/02	. Hammers; Arrangements thereof	11/00242	. . . . {Controlling the temperature of the conduction means}
9/04	. . of single hammers, e.g. travelling along printing line	11/00244	. . . . {Means for heating the copy materials before or during printing}
9/06	. . . of stationary hammers, e.g. engaging a single type-carrier	11/0025	. {Handling copy materials differing in width}
9/08	. . . . engaging more than one type-carrier	11/003	. {Paper-size detection, i.e. automatic detection of the length and/or width of copy material}
9/10	. . of more than one hammer, e.g. one for each character position	11/0035	. {Handling copy materials differing in thickness (B41J 11/20 and B41J 25/308 take precedence)}
9/12	. . . each operating in more than one character position	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}
9/127	. . Mounting of hammers	11/0045	. {Guides for printing material (curl smoothing B41J 11/0005; platens B41J 11/02, B41J 11/06; guiding webs B41J 15/046)}
9/133	. . Construction of hammer body or tip	11/005	. . {Guides in the printing zone, e.g. guides for preventing contact of conveyed sheets with printhead}
9/14	. Means for selecting or suppressing individual hammers	11/0055	. . {Lateral guides, e.g. guides for preventing skewed conveyance of printing material}
9/16	. Means for cocking or resetting hammers	11/006	. {Means for preventing paper jams or for facilitating their removal}
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		

- 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 (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](#))}
- 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 coacting 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 (detecting type of paper [B41J 11/009](#))}
- 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 (guides therefor [B41J 13/103](#))}
- 13/0027 . . {in the printing section of automatic paper handling systems (rollers [B41J 13/02](#), guides therefor [B41J 13/14](#))}
- 13/0036 . . {in the output section of automatic paper handling systems (rollers [B41J 13/02](#), guides [B41J 13/106](#))}
- 13/0045 . . {concerning sheet refeed sections of automatic paper handling systems, e.g. intermediate stackers, reversing units (printing on both faces [B41J 3/60](#))}
- 13/0054 . {Handling sheets of differing lengths}

- 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)}
- 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	19/56	• . . . Escapements controlling web or strip feed
17/36	• Alarms, indicators, or feed-disabling devices responsible to material breakage or exhaustion	19/58	• . . . Differential or variable-spacing arrangements
17/38	• for dealing with the impression-transfer material after use	19/60	• . . Auxiliary feed or adjustment devices
17/40	• . . for retracting sheets for re-use	19/62	• . . . for back spacing
17/42	• . . for webs	19/64	• . . . for justifying
19/00	Character- or line-spacing mechanisms {(superimposed movements for serial printing B41J 25/005)}	19/66	• . Carriage-release mechanisms
19/005	• {Cable or belt constructions for driving print, type or paper-carriages, e.g. attachment, tensioning means}	19/68	• . Carriage-return mechanisms, e.g. manually actuated
19/02	• with retarding devices, e.g. brakes	19/70	• . . . power driven
19/04	• Sound-deadening or shock-absorbing devices or measures therein (B41J 19/38 takes precedence)	19/72	• with power stored during character spacing
19/06	• . Resilient mounting of mechanism	19/74	• . with special means to maintain character-spacing or back- spacing elements in engagement during case-shift or like movement
19/08	• . Buffers, springs or like carriage stops	19/76	• Line-spacing mechanisms (special line-feeds, e.g. long feeds B41J 11/36)
19/10	• . Dash-pots	19/78	• . Positive-feed mechanisms
19/12	• . Gearing made of special material or specially constructed to reduce sound or shock	19/80	• . . Pawl-and-ratchet mechanisms
19/14	• with means for effecting line or character spacing in either direction	19/82	• moving a paper or like carriage
19/142	• . {with a reciprocating print head printing in both directions across the paper width}	19/84	• in the form of a roller rotated for line spacing
19/145	• . . {Dot misalignment correction}	19/86	• the pawl being normally in engagement with the ratchet
19/147	• . . {Colour shift prevention}	19/88	• moving a type carriage
19/16	• Special spacing mechanisms for circular, spiral, or diagonal-printing apparatus	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
19/18	• Character-spacing or back-spacing mechanisms; Carriage return or release devices therefor	19/92	• . . . Electromagnetically-operated mechanisms
19/20	• . Positive-feed character-spacing mechanisms (controlled by escapements B41J 19/52)	19/94	• . . . automatically operated in response to carriage return
19/202	• . . . {Drive control means for carriage movement}	19/96	• . . . Variable-spacing arrangements
19/205	• {Position or speed detectors therefor}	19/98	• . Escapement-feed mechanisms
19/207	• {Encoding along a bar}	21/00	Column, tabular or like printing arrangements; Means for centralising short lines (carriage-release mechanisms B41J 19/66)
19/22	• . . . acting by friction or gripping effect	21/02	• Stops or stop-racks
19/24	• . . . Pawl and ratchet	21/04	• Mechanisms for setting or restoring tabulation stops
19/26	• moving a paper or like carriage	21/06	• with means for preventing rebound from stops
19/28	• moving a paper or like web or strip, e.g. over a stationary support	21/08	• Mechanisms for initiating, effecting, skipping, or stopping tabulation movement; Means for centralising short lines
19/30	• . . . Electromagnetically-operated mechanisms	21/10	• with central, counter, or equivalent stop projected into path of tabulation stops
19/305	• {Linear drive mechanisms for carriage movement}	21/12	• characterised by arrangements of electrical contacts
19/32	• . . . Differential or variable-spacing arrangements	21/14	• characterised by denominational arrangements
19/34	• . Escapement-feed character-spacing mechanisms	21/16	• controlled by the sensing of marks or formations on the paper being typed, an undersheet, or the platen
19/36	• . . Driving mechanisms, e.g. springs stressed during carriage return	21/17	• controlled by stored information
19/38	• adapted for silent return	21/18	• characterised by applications of scales or indicators
19/40	• . . . Escapements having a single pawl or like detent	23/00	Power drives for actions or mechanisms (B41J 9/00 {, B41J 19/305} take precedence)
19/42	• . . . Escapements having two pawls or like detents	23/02	• Mechanical power drives
19/44	• coaxing with two toothed members, e.g. racks or wheels	23/025	• . {using a single or common power source for two or more functions}
19/46	• and mounted on a single rocker	23/04	• . with driven mechanism arranged to be clutched to continuously- operating power source
19/48	• and mounted on a single slider	23/06	• . . by snatch rolls
19/50	• . . . Electromagnetically-controlled escapements	23/08	• . . by one-revolution or part-revolution clutches
19/52	• . . . Escapements controlling positive-feed mechanism	23/10	• . . and arrested in selected position
19/54	• . . . Construction of universal bars	23/12	• . Mechanism driven by cams engaging rotating roller

23/14	. . Mechanism driven by through an oscillating or reciprocating member	25/3088	. . . {with print gap adjustment means on the printer frame, e.g. for rotation of an eccentric carriage guide shaft}
23/16	. . Mechanisms driven by a spring tensioned by power means	25/312	. . with print pressure adjustment mechanisms, e.g. pressure-on-the paper mechanisms
23/18	. . Continuously-cycling drives	25/316	. . with tilting motion mechanisms relative to paper surface
23/20	. Fluid-pressure power drives	25/32	. Impression mechanisms in which a roller co-operates with stationary type-faces
23/22	. . for key or like type selection	25/34	. Bodily-changeable print heads or carriages
23/24	. . for impression mechanisms	27/00	Inking apparatus
23/26	. . for platen or carriage movements, e.g. for line spacing, letter spacing, or carriage return	27/02	. with ink applied by pads or rotary discs
23/28	. . for type-carriage movements	27/04	. . Pads or discs; Ink supply arrangements therefor
23/30	. . for case shift	27/06	. . Arrangements to ensure maximum life of pads or discs
23/32	. Electromagnetic power drives, e.g. applied to key levers	27/08	. . Arrangements for multicolour work
23/34	. . applied to elements other than key levers	27/10	. with ink applied by rollers; Ink supply arrangements therefor
23/36	. . . and acting on type members	27/12	. . Rollers
23/38	. . . and acting on aligning or case-shift mechanisms	27/14	. . Arrangements for multicolour work
25/00	Actions or mechanisms not otherwise provided for	27/16	. with ink deposited electrostatically or electromagnetically, e.g. powdered ink
25/001	. {Mechanisms for bodily moving print heads or carriages parallel to the paper surface (character- or line-spacing mechanisms B41J 19/00)}	27/18	. . with liquid ink deposited
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)}	27/20	. with ink supplied by capillary action, e.g. through porous type members, through porous platens
25/005	. . {for serial printing movements superimposed to character- or line-spacing movements}	27/22	. with inking discs or sectors
25/006	. . {for oscillating, e.g. page-width print heads provided with counter-balancing means or shock absorbers}	29/00	Details of, or accessories for, typewriters or selective printing mechanisms not otherwise provided for
2025/008	. {comprising a plurality of print heads placed around a drum}	29/02	. Framework
25/02	. Key actions for specified purposes	29/023	. . {with reduced dimensions (for portability B41J 3/36)}
25/04	. . Back spacing	29/026	. . {Stackable}
25/06	. . Carriage return	29/04	. Means for attaching machines to baseboards
25/08	. . Case shift	29/06	. Special supports, platforms or trolleys for supporting machines on tables
25/10	. . Ink-ribbon adjustment	29/08	. Sound-deadening, or shock-absorbing stands, supports, cases or pads separate from machines
25/12	. . Character spacing	29/10	. Sound-deadening devices embodied in machines
25/14	. . Line spacing	29/12	. Guards, shields or dust excluders
25/16	. . Line spacing and carriage return by a single key	29/13	. . Cases or covers
25/18	. . Tabulating	29/14	. Attachments operated by the leg, e.g. the foot, the knee
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	29/15	. Script supports connected to the typewriter or printer
25/22	. for aligning characters for impression	29/16	. Auxiliary receptacles for articles, e.g. erasers, pencils
25/24	. Case-shift mechanisms; Fount-change arrangements	29/17	. Cleaning arrangements
25/304	. Bodily-movable mechanisms for print heads or carriages movable towards or from paper surface {(line print heads movable towards a cleaning unit B41J 2/16588)}	29/18	. Mechanisms for rendering the print visible to the operator
25/308	. . with print gap adjustment mechanisms	29/19	. . with reflectors or illuminating devices
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}	29/20	. Arrangements of counting devices
25/3084	. . . . {by means of a spacer contacting the matter to be printed}	29/22	. . Line counters
25/3086	. . . {with print gap adjustment means between the print head and its carriage}	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	31/12	. Ink ribbons having arrangements to prevent undesired contact between the impression-transfer material and machine parts or other articles
29/373	. . . sheet media bearing an adhesive layer effective to lift off wrongly typed characters	31/14	. Renovating or testing ink ribbons
29/377	. Cooling or ventilating arrangements	31/16	. . while fitted in the machine using the ink ribbons
29/38	. Drives, motors, controls or automatic cut-off devices for the entire printing mechanism	32/00	Ink-ribbon cartridges
29/387	. . Automatic cut-off devices	32/02	. for endless ribbons
29/393	. . Devices for controlling or analysing the entire machine {; Controlling or analysing mechanical parameters involving printing of test patterns }	33/00	Apparatus or arrangements for feeding ink ribbons or like character-size impression-transfer material
2029/3932	. . . { Battery or power source mounted on the carriage }	33/003	. { Ribbon spools (spools in general B65H 75/00) }
2029/3935	. . . { by means of printed test patterns }	33/006	. . { Arrangements to attach the ribbon to the spool }
2029/3937	. . . { Wireless communication between the printer and the cartridge, carriage or printhead }	33/02	. Ribbon arrangements
29/40	. Means for printing fixed, i.e. unchanging, matter in addition to selectable matter	33/04	. . mounted on moving carriages
29/42	. Scales and indicators, e.g. for determining side margins	33/06	. . Ribbons associated, but not moving, with typewriter platens, e.g. extending transversely to the length of the platen
29/44	. . for determining top and bottom margins or indicating exhaust of paper	33/08	. . . and extending parallel to the length of the platen
29/46	. Applications of alarms, e.g. responsive to approach of end of line	33/10	. . Arrangements of endless ribbons
29/48	. . responsive to breakage or exhaustion of paper or approach of bottom of paper	33/12	. . Ribbons carried by coaxially-mounted spools
29/50	. Side-stop mechanisms	33/14	. Ribbon-feed devices or mechanisms
29/52	. Top-and-bottom stop mechanisms	33/16	. . with drive applied to spool or spool spindle
29/54	. Locking devices applied to printing mechanisms	33/18	. . . by ratchet mechanism (B41J 33/30 takes precedence)
29/56	. . and manually actuated	33/20	. . . by friction
29/58	. . and automatically actuated	33/22	. . . by gears or pulleys
29/60	. . . in response to failure of power supply	33/24	. . with drive applied directly to ribbon
29/62	. . . by the absence of paper to lock hammer mechanism	33/26	. . . by rollers engaging the ribbon
29/64	. . . by a function of the printer to lock the keyboard	33/28	. . . by mechanism pulling or gripping the ribbon
29/66	. . . . Locking devices actuated when platen reaches the end of a line	33/30	. . Escapement mechanisms
29/68	. . . by completion of a page or predetermined number of lines or exhaustion of paper to lock the keyboard	33/32	. . Electromagnetic devices
29/70	. . . Interlocks between any two-carriage-moving mechanisms, e.g. character-space, back space, tabulation, carriage return or carriage- release mechanisms	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

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

- 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

- 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 (for moving nozzle or nozzle plate made of thermal bend actuator B41J 2002/14435)
- 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
- 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

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