### CPC - COOPERATIVE PATENT CLASSIFICATION

**B** PERFORMING OPERATIONS; TRANSPORTING  
*(NOTES omitted)*

**PRINTING**

**B41** PRINTING; LINING MACHINES; TYPEWRITERS; STAMPS

**B41J** TYPEWRITERS; SELECTIVE PRINTING MECHANISMS, {e.g. INK-JET PRINTERS, THERMAL PRINTERS}, i.e. MECHANISMS PRINTING OTHERWISE THAN FROM A FORME; CORRECTION OF TYPOGRAPHICAL ERRORS (composing B41B: printing on special surfaces B41F; laundry marking B41K; erasers, rubbers or erasing devices B43L 19/00; fluid media for correction of typographical errors by coating C09D 10/00; recording the results of measuring G01; recognition or presentation of data, marking record carriers in digital fashion, e.g. by punching, G06K; franking or ticket-printing and issuing apparatus G07B; electric keyboard switches, in general H01H 13/70, H03K 17/94; coding in connection with keyboards or like devices, in general H03M 11/00; receivers or transmitters for transmission of digital information H04L; transmission or reproduction of documents, or the like, e.g. facsimile transmission, H04N 1/00; printing mechanisms specially adapted for apparatus, e.g. cash registers, weighing machines, producing records of their own performance, see the relevant subclasses)

**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 of 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

<table>
<thead>
<tr>
<th>1/00</th>
<th>Typewriters or selective printing mechanisms characterised by the mounting, arrangement, or disposition of the types or dies (non-selective embossing B44B 5/000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/02</td>
<td>. with separate or detached types or dies</td>
</tr>
<tr>
<td>1/04</td>
<td>. with types or dies carried upon levers or radial arms, e.g. manually operated (B41J 1/16 takes precedence)</td>
</tr>
<tr>
<td>1/06</td>
<td>. on power-operated levers or arms</td>
</tr>
<tr>
<td>1/08</td>
<td>. with types or dies carried on sliding bars or rods</td>
</tr>
<tr>
<td>1/10</td>
<td>. on end surfaces thereof</td>
</tr>
<tr>
<td>1/12</td>
<td>. on side surfaces thereof, e.g. fixed thereto</td>
</tr>
<tr>
<td>1/14</td>
<td>. . . the types or dies being movable relative to the bars or rods (mounted on flexible bars or rods B41J 1/16)</td>
</tr>
<tr>
<td>1/16</td>
<td>. . . with types or dies arranged in stationary or sliding cases or frames or upon flexible strips, plates, bars or rods</td>
</tr>
<tr>
<td>1/18</td>
<td>. . . with types or dies strung on wires or rods</td>
</tr>
<tr>
<td>1/20</td>
<td>. . . with types or dies mounted on endless bands or the like</td>
</tr>
<tr>
<td>1/22</td>
<td>. . . with types or dies mounted on carriers rotatable for selection</td>
</tr>
<tr>
<td>1/24</td>
<td>. . . the plane of the type or die face being perpendicular to the axis of rotation (B41J 1/60 takes precedence)</td>
</tr>
<tr>
<td>1/243</td>
<td>. . . {Mounting or fixing the carriers}</td>
</tr>
</tbody>
</table>
Kinds of typewriters or of selective printing mechanisms

2. In this group, the following expressions are used:

<table>
<thead>
<tr>
<th>Expression</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ink jet</td>
<td>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</td>
</tr>
<tr>
<td>continuous ink jet</td>
<td>means a jet of ink transformed into a continuous stream of droplets or particles of colouring matter after having left the nozzle</td>
</tr>
</tbody>
</table>

NOTES

1. This group covers devices reproducing only a discrete number of tones, whereas group B41J 1/00 covers devices used for the reproduction of documents or the like, which devices are capable of reproducing continuous tone value scales.

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

<table>
<thead>
<tr>
<th>Expression</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ink spray</td>
<td>means a spray of ink transported by a stream of charged particles or air on to the printing material</td>
</tr>
<tr>
<td>selectively</td>
<td>brought liquid or particles into contact with a printing material by selective application of impact or pressure on a printing or impression-transfer material</td>
</tr>
<tr>
<td>non ink jet heads</td>
<td>where an intermediate transfer member receives the ink before transferring it on the printing material</td>
</tr>
<tr>
<td>continuous ink jet</td>
<td>generating a continuous ink jet</td>
</tr>
<tr>
<td>by vibration</td>
<td>generating single droplets or particles on demand</td>
</tr>
<tr>
<td>by pressure</td>
<td>preventing overheating</td>
</tr>
<tr>
<td>by electric or magnetic field</td>
<td>aiming at correcting manufacturing tolerances</td>
</tr>
<tr>
<td>reducing occurrence of cross talk</td>
<td>aiming at correcting other parameters</td>
</tr>
<tr>
<td>for detecting failure, e.g. clogging, malfunctioning actuator</td>
<td>for detecting failure, e.g. clogging, malfunctioning actuator</td>
</tr>
<tr>
<td>for electrostatic discharge protection</td>
<td>for increasing lifetime</td>
</tr>
<tr>
<td>preventing formation of satellite drops</td>
<td>preventing overheating</td>
</tr>
<tr>
<td>reducing number of signal lines needed</td>
<td>aiming at compensating carriage speed</td>
</tr>
<tr>
<td>reducing size of the apparatus</td>
<td>aiming at correcting alignment</td>
</tr>
<tr>
<td>reducing occurrence of cross talk</td>
<td>aiming at correcting manufacturing tolerances</td>
</tr>
<tr>
<td>for increasing lifetime</td>
<td>aiming at correcting other parameters</td>
</tr>
<tr>
<td>for detecting failure, e.g. clogging, malfunctioning actuator</td>
<td>aiming at correcting manufacturing tolerances</td>
</tr>
<tr>
<td>for electrostatic discharge protection</td>
<td>preventing overheating</td>
</tr>
<tr>
<td>preventing formation of satellite drops</td>
<td>reducing number of signal lines needed</td>
</tr>
<tr>
<td>reducing size of the apparatus</td>
<td>reducing cost</td>
</tr>
<tr>
<td>reducing occurrence of cross talk</td>
<td>controlling trajectory</td>
</tr>
</tbody>
</table>
Kinds of typewriters or of selective printing mechanisms

2/04528 . . . . . . . . . [aiming at warming up the head]
2/0453 . . . . . . . . . [controlling a head having a dummy chamber]
2/04531 . . . . . . . . . [controlling a head having a heater in the manifold]
2/04533 . . . . . . . . . [controlling a head having several actuators per chamber]
2/04535 . . . . . . . . . [involving calculation of drop size, weight or volume]
2/04536 . . . . . . . . . [using history data]
2/04538 . . . . . . . . . [involving calculation of heater resistance]
2/0454 . . . . . . . . . [involving calculation of temperature]
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]
2/04565 . . . . . . . . . [detecting heater resistance]
2/04566 . . . . . . . . . [detecting humidity]
2/04568 . . . . . . . . . [Control according to number of actuators used simultaneously]
2/0457 . . . . . . . . . [Power supply level being detected or varied]
2/04571 . . . . . . . . . [detecting viscosity]
2/04573 . . . . . . . . . [Timing; Delays]
2/04575 . . . . . . . . . [controlling heads of acoustic type]
2/04576 . . . . . . . . . [controlling heads of electrostatic type]
2/04578 . . . . . . . . . [controlling heads based on electrostatically-actuated membranes]
2/0458 . . . . . . . . . [controlling heads based on heating elements forming bubbles]
2/04581 . . . . . . . . . [controlling heads based on piezoelectric elements]
2/04583 . . . . . . . . . [controlling heads based on discharge by lowering the surface tension of meniscus]
2/04585 . . . . . . . . . [controlling heads based on thermal bent actuators]
2/04586 . . . . . . . . . [controlling heads of a type not covered by groups B41J 2/04575 - B41J 2/04585, or of an undefined type]
2/04588 . . . . . . . . . [using a specific waveform]
2/0459 . . . . . . . . . [Height of the driving waveform being adjusted]
2/04591 . . . . . . . . . [Width of the driving signal being adjusted]
2/04593 . . . . . . . . . [Dot-size modulation by changing the size of the drop]
2/04595 . . . . . . . . . [Dot-size modulation by changing the number of drops per dot]
2/04596 . . . . . . . . . [Non-ejecting pulses]
2/04598 . . . . . . . . . [Pre-pulse]
2/05 . . . . . . . . . . . produced by the application of heat
2/055 . . . . . . . . . . . Devices for absorbing or preventing back-pressure
2/06 . . . . . . . . . . . by electric or magnetic field
2002/061 . . . . . . . . [Ejection by electric field of ink or of toner particles contained in ink]
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]
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]
2/065 . . . . . . . . . . . involving the preliminary making of ink protuberances
2/07 . . . . . . . . . . . characterised by jet control (B41J 2/205 takes precedence)
2/072 . . . . . . . . . . . [by thermal compensation]
2/075 . . . . . . . . . . . for many-valued deflection
2/08 . . . . . . . . . . . charge-control type
2/085 . . . . . . . . . . . Charge means, e.g. electrodes
2/09 . . . . . . . . . . . Deflection means
2/095 . . . . . . . . . . . electric field-control type
2/10 . . . . . . . . . . . magnetic field-control type
2/105 . . . . . . . . . . . for binary-valued deflection
2/11 . . . . . . . . . . . for ink spray
2/115 . . . . . . . . . . . synchronising the droplet separation and charging time
2/12 . . . . . . . . . . . testing or correcting charge or deflection
2/125 . . . . . . . . . . . Sensors, e.g. deflection sensors
2/13 . . . . . . . . . . . for inclination of printed pattern
2/135 . . . . . . . . . . . Nozzles
2/14 . . . . . . . . . . . Structure thereof {only for on-demand ink jet heads}
2/14008 . . . . . . . . . . . [Structure of acoustic ink jet print heads]
2/14016 . . . . . . . . . . . [Structure of bubble jet print heads]
2/14024 . . . . . . . . . . . [Assembling head parts]
2/14032 . . . . . . . . . . . [Structure of the pressure chamber]
2/1404 . . . . . . . . . . . [Geometrical characteristics]
2/14048 . . . . . . . . . . . [Movable member in the chamber]
2/14056 . . . . . . . . . . . [Plural heating elements per ink chamber]
2/14064 . . . . . . . . . . . [Heater chamber separated from ink chamber by a membrane]
2/14072 . . . . . . . . . . . [Electrical connections, e.g. details on electrodes, connecting the chip to the outside...]
2/1408 . . . . . . . . . . . [Structure dealing with thermal variations, e.g. cooling device, thermal coefficients of materials]
Kinds of typewriters or of selective printing mechanisms

- Structure of heating means
- Current flowing through the ink
- Laser or electron beam heating the ink
- Resistive element
- Shape
- Layer structure
- Resistor surrounding the nozzle opening
- Structure of the manifold
- Structures including a sensor
- Structure having belt or drum with holes filled with ink
- Bubble vented to the ambiance
- Segmented heater
- characterised by the position of the heater and the nozzle
- movable member in the ink chamber (for bubble jet B41J 2/14048)
- Structure of print heads with piezoelectric elements
- of finger type, chamber walls consisting integrally of piezoelectric material
- Multi layer finger type piezoelectric element
- Finger type piezoelectric element on only one side of the chamber
- of film type, deformed by bending and disposed on a diaphragm
- having a cover around the piezoelectric thin film element
- Embedded thin film piezoelectric element
- Multi layer thin film type piezoelectric element
- Sheet-like thin film type piezoelectric element
- of stacked structure type, deformed by compression/extension and disposed on a diaphragm
- of cantilever type
- of tubular type
- of disc type
- Flow passage between manifold and chamber
- Structure of ink jet print heads with electrostatically actuated membrane
- Print head without nozzle
- Structure of nozzle plates
- Multiple pressure elements per ink chamber (for bubble jet B41J 2/14056)
- Ejection by pressure produced by thermal deformation of ink chamber, e.g. buckling
- Sensor in each pressure chamber
- Assembling elements of heads
- Back shooter
- Edge shooter
- Front shooter
- Electrowetting
- including a filter
- Groove in the nozzle plate
- (Manifold (for bubble jet B41J 2/14145))
- Structure of ink jet print heads with thermal bend detached actuators
- Moving nozzle made of thermal bend detached actuator
- Nozzle guard
- Structure of ink jet print heads discharging by lowering surface tension of meniscus
- Matrix arrangement of the pressure chambers
- Multiple feed channels per ink chamber
- characterised by nozzle shapes or number of orifices per chamber
- Separated pressure chamber (for bubble jet B41J 2/14064)
- Electrical connection (for bubble jet B41J 2/14072)
- Arrangement thereof
- for serial printing
- for line printing
- Production of nozzles
- Production of bubble jet print heads (B41J 2/1606, B41J 2/162 take precedence)
- of the front shooter type
- of the edge shooter type
- Coating the nozzle area or the ink chamber
- Production of print heads with piezoelectric elements (B41J 2/1606, B41J 2/162 take precedence)
- of finger type, chamber walls consisting integrally of piezoelectric material
- of film type, deformed by bending and disposed on a diaphragm
- of stacked structure type, deformed by compression/extension and disposed on a diaphragm
- of cantilever type
- of tubular type
- of disc type
- Fixing the piezoelectric elements
- Manufacturing of the nozzle plates
- (manufacturing processes)
- bonding and adhesion
- (electroforming)
- etching
- (dry etching)
- (wet etching)
- (photolithography)
- (machining)
- (laser machining)
- (dividing the wafer into individual chips)
- molding
- (sacrificial molding)
- (thin film formation)
- (thin film formation by CVD)
- (chemical vapor deposition)
- (thin film formation by plating)
- (thin film formation by spincoating)
Kinds of typewriters or of selective printing mechanisms

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}
2/16532 . . . . . . . {using wiping constructions (B41J 2/16552 takes precedence)}
2/16538 . . . . . . . {with brushes or wiper blades perpendicular to the nozzle plate}
2/16544 . . . . . . . {Constructions for the positioning of wipers}
2/16547 . . . . . . . {the wipers and caps or spitoons being on the same movable support}
2/1655 . . . . . . . {with wiping surface parallel with nozzle plate and mounted on reels, e.g. cleaning ribbon cassettes}
2/16552 . . . . . . . {using cleaning fluids}
2/16561 . . . . . . . {by an electrical field}
2/16564 . . . . . . . {Heating means therefor, e.g. for hot melt inks}
2/16567 . . . . . . . {using ultrasonic or vibrating means}
2/1657 . . . . . . . {Cleaning of only nozzles or print head parts being selected}
2/16573 . . . . . . . {Cleaning process logic, e.g. for determining type or order of cleaning processes}
2/16576 . . . . . . . {Cleaning means pushed or actuated by print head movement}
2/16579 . . . . . . . {Detection means therefor, e.g. for nozzle clogging}
2/16582 . . . . . . . {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}
2/16591 . . . . . . . {for line print heads above an endless belt}
2/16594 . . . . . . . {Pumps or valves for cleaning}
2/16597 . . . . . . . {Pumps for idle discharge of liquid through nozzles}
2/17 . . . . . . . . . characterised by ink handling
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}
2/1728 . . . . . . . . {Closed waste ink collector}
2/1735 . . . . . . . . {Closed waste ink collector with ink supply tank in common container}
2/1742 . . . . . . . . {Open waste ink collector, 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}
2/17516 . . . . . . . . {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}
2/17569 . . . . . . . . {based on the amount printed or to be printed}
2/17573 . . . . . . . . {using optical means for ink level indication}
2/17576 . . . . . . . . {using a floater for ink level indication}
2/17579 . . . . . . . . {Measuring electrical impedance for ink level indication}
2/17583 . . . . . . . . {using vibration or ultra-sons for ink level indication}
2/17586 . . . . . . . . {using ink bag deformation for ink level indication}
2/17589 . . . . . . . . {using ink level as input for printer mode selection or for prediction of remaining printing capacity}
Kinds of typewriters or of selective printing mechanisms

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]
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 15/10; 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 2/129)]
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
2/3350 . . . . . . . [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
Kinds of typewriters or of selective printing mechanisms

2/385 . . . characterised by selective supply of electric current or selective application of magnetism to a printing or impression-transfer material (B41J 2/205 takes precedence; electrography, magnetography G03G)

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 (electronic switching circuits in general H03K 17/00)

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 (optical elements, systems, or apparatus G02B; modulation or deflection of light G02E; electrophotography G03G)

2/44 . . . using single radiation source [per colour], e.g. lighting beams or shutter arrangements (B41J 2/465, B41J 2/47); B41J 2/475 takes precedence)

2/442 . . . . [using lasers (ablative marking methods and sheet materials for use therein B41M 5/24; working material by laser beam in general B23K 26/00)]

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 (photographic composing B41B)

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 ((printers with two or more sets of printing elements B41J 3/53; 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))

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; providing dot disposition modes by bodily changing the angle of a print head B41J 25/003)]

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; for photomechanical production G03F 5/00)

2/525 . . . . Arrangement for multi-colour printing, not covered by group B41J 2/21, e.g. applicable to two or more kinds of printing or marking process (for photomechanical production G03F 3/00)

3/00 Typewriters or selective printing or marking mechanisms, [e.g. ink-jet printers, thermal printers] characterised by the purpose for which they are constructed (cryptographic typewriters G09C 3/00)

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
Kinds of typewriters or of selective printing mechanisms

3/28 . . for printing downwardly on flat surfaces, e.g. of books, drawings, boxes { envelopes, e.g. flat-bed ink-jet printers (B41J 3/36, B41J 3/407, B41J 3/4071, B41J 3/4073; B41J 3/4075, B41J 3/4076, B41J 3/4078 take precedence; flat page-size platen B41J 1/106; conveyer belts B41J 13/12; drawing instruments B43L 13/00, automatic draughting machines B43L 13/022) }

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 musical scores

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) }

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 { surface shaping, e.g. embossing B29C 59/00; mechanical deformation of paper or cardboard without removing material B31F 1/00; machines or apparatus for embossing decorations or marks B41B 5/00 }

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 { manually-controlled or manually-operable label dispensers having printing equipment B65C 11/02) }

3/407 . . for marking on special material (printing on special surfaces B41J 7/00; 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) }

3/4075 . . { 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 an application of an electric field G09F 9/372; of a magnetic field G09F 9/375) }

3/4078 . . { Printing on textile (ink-jet dying 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 { printing mechanisms coupled to typographical composing machines B41B 27/41) }

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 } (punching mechanisms G06K)

3/51 . . { the printed and recorded information being identical; using type elements with code-generating means (G06K 1/12 takes precedence) }

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 takes 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 {; B41J 15/18, B41J 15/20, B41J 15/22 and B41J 15/24 take precedence) }

Common details or accessories

5/00 Devices or arrangements for controlling character selection { [interpreting G06K 3/00; 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 }

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
Common details or accessories

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 5/002)
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
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 therefor
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
Common details or accessories

11/00 Devices or arrangements (of selective printing mechanisms, e.g. ink-jet printers, thermal printers,) for supporting or handling copy material in sheet or web form (printing on both faces B41J 3/360; specially adapted for supporting or handling copy material in short lengths B41J 13/00; in continuous form B41J 15/00; holders for text to be copied B41J 29/00; handling sheets or webs in general B65H; apparatus for electrographic processes using a charge pattern, e.g. copying machines, G03G 15/00))

11/0005... (Curl smoothing, i.e. smoothing down corrugated printing material, e.g. by pressing means acting on wrinkled printing material (means for tensioning webs in general B41J 15/16; tensioning webs by using redirecting rollers or redirecting nonrevolving guides B41J 15/165; smoothers in general B65H 5/36 or B65H 29/52; taking out curl from webs B65H 23/34; decurling sheets G03G 15/6576))

11/001... (Handling wide copy materials, (wide cut sheets B41J 13/0072))

11/0015... (for treating before, during or after printing or for uniform coating or laminating the copy material before or after printing (selective coating B41J 2/2114; application of ink fixing material by inkjet printers B41M 5/0011; after-treatment of prints relating to the nature of material B41M 7/00; after-treatment of prints using protective coatings or layers B41M 7/0027))

11/002... (Heating or irradiating, e.g. by UV or IR, or drying of copy material)

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 and B41J 25/308 take 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) (Guides for printing material (curl smoothing B41J 11/0005; platen 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 (guides in the printing section for copy material in short lengths B41J 13/14))

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 (conveyor belts specially adapted for handling sheets B41J 13/08; conveyor belts specially adapted for handling copy material in continuous form B41J 15/048; conveyor belts in general B65G 15/00; separating articles from piles using belts B65H 3/04; feeding articles by belts B65H 5/02))

11/0075... (Low-paper indication, i.e. indicating the state when copy material has been used up nearly or completely)
Common details or accessories

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 15/00)]

11/50 . in which two or more papers or sets are separately fed in the same direction towards the printing position ([B41J 15/18, B41J 15/20, B41J 15/22 and B41J 15/24 take precedence])

11/51 . with different feed rates ([B41J 15/18, B41J 15/20, B41J 15/22 and B41J 15/24 take precedence])

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 ([B41J 3/36 takes precedence])

11/58 . Supply holders for sheets or fan-folded webs, e.g. shelves, tables, scrolls, pile holders ([B41J 13/10, B41J 13/103 and B41J 13/106 take precedence])

11/60 . Erasing or correcting tables

11/62 . Shields or masks

11/64 . Applications of scales or indicators

11/66 . Applications of cutting devices ([cutting in general B26D])

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, thermal printers,] specially adapted for supporting or handling copy material in short lengths, e.g. sheets ([handling sheets or webs in general B65H; apparatus for electrographic processes using a charge pattern, e.g. copying machines, G03G 15/00])

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 [: rollers for conveying in general B65G 3900; separating articles from piles using friction rollers B65H 3/06; feeding articles by rollers B65H 5/06])

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 feeding devices ([B41J 11/007 takes precedence])

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 (handling thick cut sheets larger than credit cards B41J 13/0063)]

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
Common details or accessories

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 ((paper carriage guides B41J 11/22; superimposed movements for serial printing B41J 25005;) key actions B41J 2502)
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
Common details or accessories

2023/00 Power drives for actions or mechanisms

23/02 . Mechanical power drives
23/025 . (using a single or common power source for two or more functions)
23/04 . with driven mechanism arranged to be clutched to continuously- operating power source
23/06 . by snatch rolls
23/08 . by one-revolution or part-revolution clutches
23/10 . and arrested in selected position
23/12 . Mechanism driven by cams engaging rotating roller
23/14 . Mechanism driven by through an oscillating or reciprocating member
23/16 . Mechanisms driven by a spring tensioned by power means
23/18 . Continuously-cycling drives
23/20 . Fluid-pressure power drives
23/22 . for key or like type selection
23/24 . for impression mechanisms
23/26 . for platen or carriage movements, e.g. for line spacing, letter spacing, or carriage return
23/28 . for type-carriage movements
23/30 . for case shift
23/32 . Electromagnetic power drives, e.g. applied to key levers
23/34 . applied to elements other than key levers
23/36 . and acting on type members
23/38 . and acting on aligning or case-shift mechanisms

25/00 Actions or mechanisms not otherwise provided for
25/001 . (Mechanisms for bodily moving print heads or carriages parallel to the paper surface (character- or line-spacing mechanisms B41J 19/00))
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 25/056))
25/005 . (for serial printing movements superimposed to character- or line-spacing movements)
25/006 . (for oscillating, e.g. page-width print heads provided with counter-balancing means or shock absorbers)
2025/008 . (comprising a plurality of print heads placed around a drum)
25/02 . Key actions for specified purposes
25/04 . Back spacing
25/06 . Carriage return
25/08 . Case shift
25/10 . Ink-ribbon adjustment
25/12 . Character spacing
25/14 . Line spacing
25/16 . Line spacing and carriage return by a single key
25/18 . Tabulating

19/00 Column, tabular, or like printing arrangements;
Means for centralising short lines (carrier-release mechanisms B41J 19/66; key actions B41J 25/18)
21/02 . Stops or stop-racks
21/04 . Mechanisms for setting or restoring tabulation stops
21/06 . with means for preventing rebound from stops
21/08 . Mechanisms for initiating, effecting, skipping, or stopping tabulation movement; Means for centralising short lines
21/10 . with central, counter, or equivalent stop projected into path of tabulation stops
21/12 . characterised by arrangements of electrical contacts

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
19/68 . . . . Carriage-return mechanisms, e.g. manually actuated
19/70 . . . . power driven
19/72 . . . . with power stored during character spacing
19/74 . . . . with special means to maintain character-spacing or back- spacing elements in engagement during case-shift or like movement
19/76 . . Line-spacing mechanisms (special line-feeds, e.g. long feeds B41J 11/36)
19/78 . . Positive-feed mechanisms
19/80 . . . Pawl-and-ratchet mechanisms
19/82 . . . . moving a paper or like carriage
19/84 . . . . in the form of a roller rotated for line spacing
19/86 . . . . the pawl being normally in engagement with the ratchet
19/88 . . . . moving a type carriage
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
19/92 . . . . Electromagnetically-operated mechanisms
19/94 . . . . automatically operated in response to carriage return
19/96 . . Variable-spacing arrangements
19/98 . . Escapement-feed mechanisms

21/14 . . characterised by denominational arrangements
21/16 . . controlled by the sensing of marks or formations on the paper being typed, an undersheet, or the platen
21/17 . . controlled by stored information
21/18 . . characterised by applications of scales or indicators

CPC - 2019.05
Common details or accessories

29/00 Details of, or accessories for, typewriters or selective printing mechanisms not otherwise provided for

29/02 . Framework
29/023 . {with reduced dimensions for portability B41J 3/36)

29/026 . {Stackable}
29/04 . Means for attaching machines to baseboards
29/06 . Special supports, platforms or trolleys for supporting machines on tables

29/08 . Sound-deadening, or shock-absorbing stands, supports, cases or pads separate from machines
29/10 . Sound-deadening devices embodied in machines B41J 19/04 takes precedence
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 (tables, desks, office furniture in general A47B)
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 (ink-ribbon shifts B41J 35/20)
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 (B41J 31/00 takes precedence)
29/37 . 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]

29/209/3932 . . . {Battery or power source mounted on the carriage]
29/209/3935 . . . {by means of printed test patterns]
29/209/3937 . . . {Wireless communication between the printer and the cartridge, carriage or printhead]

29/40 . Means for printing fixed, i.e. unchanged, matter in addition to selectable matter
29/42 . Scales and indicators, e.g. for determining side margins
29/44 . for determining top and bottom margins or indicating exhaust of paper
29/46 . Applications of alarms, e.g. responsive to approach of end of line (responsive to transfer-material breakage or exhaustion B41J 17/36, B41J 35/36)
29/48 . responsive to breakage or exhaustion of paper or approach of bottom of paper
29/50 . Side-stop mechanisms
29/52 . Top-and-bottom stop mechanisms
29/54 . Locking devices applied to printing mechanisms
29/56 . and manually actuated
29/58 . and automatically actuated
29/60 . . . in response to failure of power supply
29/62 . . . by the absence of paper to lock hammer mechanism
Common details or accessories

Ink ribbons; Ink-ribbon mechanisms

31/00 Ink ribbons (spools for ink ribbons B65H 75/00; coated or treated non-woven strips or sheets used as ink ribbons D21H); Testing or renovating ink ribbons

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 (spools in general B65H 75/00)]
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 paws 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; by adjustment of vibrator mechanisms B41J 35/14)
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 (key actions B41J 25/02)
35/14 . . . for multicolour work; for ensuring maximum life of ink ribbon; for rendering ink-ribbon inoperative
35/16 . Multicolour arrangements (B41J 35/10 takes precedence)
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
<table>
<thead>
<tr>
<th>Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>35/23</td>
<td>. . with two or more ribbon guides</td>
</tr>
<tr>
<td>35/24</td>
<td>. . Mechanisms specially adapted for feeding impression-transfer materials of foil form</td>
</tr>
<tr>
<td>35/26</td>
<td>. . Ink-ribbon shields or backings</td>
</tr>
<tr>
<td>35/28</td>
<td>. . Detachable carriers or holders for ink-ribbon mechanisms</td>
</tr>
<tr>
<td>35/30</td>
<td>. . Manifolding or like arrangements</td>
</tr>
<tr>
<td>35/32</td>
<td>. . for producing a plurality of copies along the printing line by a single ink ribbon</td>
</tr>
<tr>
<td>35/34</td>
<td>. . using a plurality of separate ink ribbons, e.g. including one hectographic ink ribbon</td>
</tr>
<tr>
<td>35/35</td>
<td>. . using unwound short lengths of ink ribbons</td>
</tr>
<tr>
<td>35/36</td>
<td>. . Alarms, indicators, or feed disabling devices responsive to ink ribbon breakage or exhaustion</td>
</tr>
<tr>
<td>35/38</td>
<td>. . Feeding the ink ribbon to waste after use</td>
</tr>
</tbody>
</table>

| 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 (for moving nozzle or nozzle plate made of thermal bend actuator B41J 2002/1435) |
| 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 |