CPC - COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING

**NOTES** omitted

TRANSPORTING

B65 CONVEYING; PACKING; STORING; HANDLING THIN OR FILAMENTARY MATERIAL

B65H HANDLING THIN OR FILAMENTARY MATERIAL, e.g. SHEETS, WEBS, CABLES

**NOTES**
1. This subclass does not cover methods or devices intimately associated with other operations on thin or filamentary material, e.g. sheets, webs, cables or means for performing such operations, which are classified in the relevant subclasses for these operations, e.g.:
   - B07C: Postal sorting, similar sorting of documents, e.g. cheques
   - B08B 1/02: Cleaning travelling work, e.g. webs, by methods involving the use of tools, brushes or like members
   - B21B 41/00: Metal rolling involving guiding, conveying or accumulating easily-flexible work, e.g. wire, sheet metal bands, in loops or curves
   - B21C 47/00: Winding-up, coiling, winding-off or temporarily accumulating metal wire, metal band or other flexible metal material, characterised by features relevant to metal processing only, other than by rolling
   - B21D 43/00: Feeding, positioning or storing devices, combined with, or arranged in, or specially adapted for use in connection with, apparatus for working or processing sheet metal without essentially removing material
   - B23K 9/12: Means for automatic feeding of electrodes for spot or seam welding or cutting
   - B29C 31/00: Handling for shaping or joining of plastics, for shaping of substances in a plastic state in general or for after-treatment of shaped products, e.g. feeding the material to be shaped
   - B41B 15/32: Composing machines
   - B41B 21/32: Conveying or guiding webs through rotary printing presses or machines
   - B41J 11/00: to Handling of copy- or impression-transfer material
   - B41J 17/00: in typewriters or selective printing mechanisms
   - B41K 3/44: Means for handling copy matter in stamping or numbering apparatus or devices
   - B41L: Handling sheets or webs in apparatus or devices for manifolding, duplicating or printing for office or other commercial purposes, or on addressing machines or like series-printing machines
   - B42B: Handling relating to permanently attaching together sheets, quires, or signatures
   - B42C: Handling sheets in book-binding
   - B65B: Handling of sheets or webs in apparatus for, or methods of, packaging articles, not of interest apart from their application in packaging machines
   - B65C: Handling of labels in labelling or tagging apparatus
   - C14B 1/62: Winding or stacking hides or leather in machines or devices for manufacturing leather
   - D01- D07: Spinning, weaving, braiding, lace-making, knitting, sewing, making ropes or cables
   - D21F 2/00: Transferring webs from wet ends to press sections in paper-making
   - F26B 13/00: Handling fabrics, fibres, yarns or other material in long lengths in drying apparatus
   - G03B: Film-strip handling or handling of pictures in apparatus for taking photographs or for projecting or viewing them
   - G06K 13/00: Conveying record carriers from one station to another
   - G06M 7/00: Counting of flat articles, e.g. sheets, carried by a conveyor
   - G11B 15/00: to Information storage based on relative movement
   - G11B 19/00: involving handling record carriers for recording or reproducing
   - G11B 23/00: Manufacturing coils for magnets, inductances, transformers, by winding
   - H01F 41/06: Machines for winding capacitors
   - H01G 13/02: Sheet handling not of interest apart from its use in systems for transmission or reproduction of pictures or patterns not varying in time, e.g. facsimile transmission

2. In this subclass:
Feeding articles to machines; Separating articles from piles; Pile supports

B65H

(continued)

- the groups relating to thin material, as defined under (i) of Note (3) below, are primarily intended to cover the handling of articles made of paper or cardboard, but also include the handling of articles made of other materials which have similar characteristics or present similar handling problems, e.g. articles made of sheet plastics or leather;
- the groups relating to filamentary material (groups B65H 49/00 onwards) as defined in Note (3) below, cover only methods or devices of general application or interest.

3. In this subclass, the following terms or expressions are used with the meanings indicated:
- “handling” includes feeding, folding (other than in the manufacture of products), guiding, orientating, storing, unwinding, and winding;
- “thin material” includes:
  i. sheets, signatures, envelopes, blanks, and thin and thin piles thereof (hereinafter referred to as “articles”), and
  ii. webs, tapes, and films, e.g. of paper, fabric, metal foil, or plastics;
- “filamentary material” includes thread, wires, ropes, cables, and hoses;
- “package” means a mass of filamentary material, formerly coiling, depositing, or winding, with or without a supporting core or former or an enclosing container or receptacle.
- “[yarn] also covers similar filamentary materials.”

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following
CPC groups:

<table>
<thead>
<tr>
<th>IPC Group</th>
<th>CPC Group</th>
<th>Covered by</th>
</tr>
</thead>
<tbody>
<tr>
<td>B65H 19/16</td>
<td>B65H 19/1889</td>
<td></td>
</tr>
<tr>
<td>B65H 35/07</td>
<td>B65H 35/0006</td>
<td></td>
</tr>
<tr>
<td>B65H 77/00</td>
<td>B65H 23/00, B65H 59/00</td>
<td></td>
</tr>
</tbody>
</table>

2. 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.

Feeding articles to machines; Separating articles from piles; Pile supports (manipulators B25J)

1/00 Supports or magazines for piles from which articles are to be separated
(carriers used for associating, collating, or gathering articles B65H 39/00)

1/02 . adapted to support articles on edge
1/022 . {with non-controlled means for advancing the pile to the separating device, e.g. weights or spring)
1/025 . {with controlled positively-acting mechanical devices for advancing the pile to the separating device to the separating device}
1/027 . {Support fully or partially removable from the handling machine, e.g. cassette, drawer}
1/04 . adapted to support articles substantially horizontally, e.g. for separation from top of pile
1/06 . for separation from bottom of pile
1/08 . with means for advancing the articles to present the articles to the separating device (B65H 1/02 takes precedence)
1/10 . comprising weights (B65H 1/022 takes precedence)
1/12 . comprising spring (B65H 1/022 takes precedence)
1/14 . comprising positively-acting mechanical devices (B65H 1/022 takes precedence)
1/16 . comprising pneumatic or hydraulic means (B65H 1/18, B65H 1/20 take precedence)
1/18 . controlled by height of pile
1/20 . controlled by weight of pile; Floating arrangements
1/22 . moving in direction of plane of articles, e.g. for bodily advancement of fanned-out piles
1/225 . {Round stack feeders}
1/24 . with means for relieving or controlling pressure of the pile

1/26 . with auxiliary supports to facilitate introduction or renewal of the pile
1/263 . [Auxiliary supports for keeping the pile in the separation process during introduction of a new pile]
1/266 . [Support fully or partially removable from the handling machine, e.g. cassette, drawer (B65H 1/027 takes precedence)]
1/28 . compartmented to receive piles side-by-side
1/30 . with means for replenishing the pile during continuous separation of articles therefrom (B65H 1/22 takes precedence)

3/00 Separating articles from piles (associating, collating, or gathering articles B65H 39/00); machines for separating superposed webs B65H 41/00; unrolling thin material combined with folding B65H 45/26; combinations of piling and depiling operations, of interest apart from the single operation of piling or depiling B65H 83/00 {B07C 1/02, G07D 11/50})

3/02 . using friction forces between articles and separator
3/04 . . Endless-belt separators
3/042 . . [separating from the bottom of the pile]
3/045 . . [for separating substantially vertically stacked articles]
3/047 . . [separating from the top of a pile]
3/06 . . Rollers or like rotary separators (B65H 3/42 takes precedence)
3/0607 . . [cooperating with means for automatically separating the pile from roller or rotary separator after a separation step]
3/0615 . . [reciprocating and rotatable in one direction only]
3/0623 . . [acting at least during a part of each separation cycle on the articles in a direction opposite to the final separating direction]
3/063 . . [separating from the bottom of pile (B65H 3/0615, B65H 3/0623 take precedence)]
Feeding articles to machines; Separating articles from piles; Pile supports

3/0638 . . . Construction of the rollers or like rotary separators (B65H 3/0615 takes precedence; construction of feed or guide rollers B65H 27/00)

3/0646 . . . Wave generation rollers, i.e. combing wheels

3/0653 . . . [for separating substantially vertically stacked articles]

3/0661 . . . [for separating inclined-stacked articles with separator rollers above the stack]

3/0669 . . . Driving devices therefor

3/0676 . . . [with two or more separator rollers in the feeding direction]

3/0684 . . . [on moving support, e.g. pivoting, for bringing the roller or like rotary separator into contact with the pile]

3/0692 . . . Vacuum assisted separator rollers

3/08 . . . using pneumatic force (B65H 3/40, B65H 3/42 take precedence)

3/0808 . . . Suction grippers

3/0816 . . . separating from the top of the pile

3/0825 . . . (and acting on the rear part of the articles relatively to the final separating direction)

3/0833 . . . (and acting on the front part of the articles relatively to the final separating direction)

3/0841 . . . [this action resulting at least during a part of each separating cycle, in a movement of at least the front part of the articles in a direction opposite to the final separating direction]

3/085 . . . separating from the bottom of the pile

3/0858 . . . [this action resulting merely in a curvature of each article being separated (in combination with the use of screw or like separators B65H 3/28)]

3/0866 . . . [the final separation being performed between rollers]

3/0875 . . . [the final separation being performed by mechanical grippers]

3/0883 . . . Construction of suction grippers or their holding devices

3/0891 . . . Generating or controlling the depression (B65H 3/0883, B65H 3/14 take precedence; in response to abnormal circumstances B65H 7/16)

3/10 . . . Suction rollers

3/12 . . . Suction bands, belts, or tables moving relatively to the pile

3/122 . . . Suction tables

3/124 . . . Suction bands or belts

3/126 . . . separating from the bottom of the pile

3/128 . . . separating from the top of the pile

3/14 . . . Air blasts producing partial vacuum

3/16 . . . using magnetic force

3/18 . . . using electrostatic force

3/20 . . . using adhesives

3/22 . . . by needles or the like engaging the articles

3/24 . . . by pushers engaging the edges of the articles

3/242 . . . [for separating a part of the pile, i.e. several articles at once]

3/245 . . . [the pile being pre-marked]

3/247 . . . [the pile being off-set]

3/26 . . . by separators engaging folds, flaps, or projections of articles

3/28 . . . by screw or like separators

3/30 . . . by escapement devices (screw and like separators B65H 3/28); from staggered piles; from piles of articles having staggered formations, e.g. cuts or perforations

3/32 . . . by elements, e.g. fingers, plates, rollers, inserted or traversed between articles to be separated and remainder of the pile (such elements acting only as supplementary devices to assist separation or prevent double feed B65H 3/50)

3/322 . . . [for separating a part of the pile, i.e. several articles at once]

3/325 . . . [the pile being pre-marked]

3/327 . . . [the pile being off-set]

3/34 . . . Article-retaining devices controlling the release of the articles to the separators

3/36 . . . by separators moved in special paths, e.g. enclosing an area

3/38 . . . the paths not enclosing an area

3/40 . . . by two or more separators acting alternately on the same pile (rotary or oscillating bodies carrying two or more separators B65H 3/42)

3/42 . . . by two or more separators mounted for movement with, or relative to, rotary or oscillating bodies

3/44 . . . Simultaneously, alternately, or selectively separating articles from two or more piles

3/443 . . . [simultaneously]

3/446 . . . [alternatively, i.e. according to a fixed sequence]

3/46 . . . Supplementary devices or measures to assist separation or prevent double feed (control means comprising detectors responsive to double feed B65H 7/12)

3/48 . . . Air blast acting on edges of, or under, articles

3/50 . . . Elements, e.g. fingers, plates, rollers, inserted or traversed between articles to be separated and remainder of the pile

3/52 . . . Friction retainers acting on under or rear side of article being separated

3/5207 . . . [Non-driven retainers, e.g. movable retainers being moved by the motion of the article]

3/5215 . . . [the retainers positioned under articles separated from the top of the pile]

3/5223 . . . [Retainers of the pad-type, e.g. friction pads]

3/523 . . . [the retainers positioned over articles separated from the bottom of the pile]

3/5238 . . . [Retainers of the pad-type, e.g. friction pads]

3/5246 . . . [Driven retainers, i.e. the motion thereof being provided by a dedicated drive]

3/5253 . . . [the retainers positioned under articles separated from the top of the pile]

3/5261 . . . [Retainers of the roller type, e.g. rollers]

3/5269 . . . [Retainers of the belt type, e.g. belts]

3/5276 . . . [the retainers positioned over articles separated from the bottom of the pile]

3/5284 . . . [Retainers of the roller type, e.g. rollers]

3/5292 . . . [Retainers of the belt type, e.g. belts]

3/54 . . . Pressing or holding devices

3/56 . . . Elements, e.g. scrapers, fingers, needles, brushes, acting on separated article or on edge of the pile (B65H 3/52 takes precedence)

3/565 . . . [for reintroducing partially separated articles in the stack]
Feeding articles to machines; Separating articles from piles; Pile supports

3/58 . . . Articles spiked, threaded, cemented, or gummed together, to prevent double feed, e.g. piles with gummed edges
3/60 . . . Loosening articles in piles
3/62 . . . by swinging, agitating, or knocking the pile
3/64 . . . by vacuum apparatus
3/66 . . . Article guides or smoothers, e.g. movable in operation
3/68 . . . immovable in operation

5/00 Feeding articles separated from piles; Feeding articles to machines { (B65H 9/00 takes precedence; ) identical mechanisms or parts for delivering or advancing articles from machines B65H 29/00; recirculating articles B65H 85/00 (, G03B 27/6257))
5/002 . . . [Adaptations of counting devices (delivery of articles from machines B65H 29/001)]
5/004 . . . [using electrostatic force]
5/006 . . . [Feeding stacks of articles to machines]
5/008 . . . [using vibrations]
5/02 . . . by belts or chains {, e.g. between belts or chains (by combinations of endless conveyors and grippers B65H 5/085; by suction belts B65H 5/224)}
5/021 . . . [by belts]
5/023 . . . [between a pair of belts forming a transport nip]
5/025 . . . [between belts and rotary means, e.g. rollers, drums, cylinders or balls, forming a transport nip]
5/026 . . . [between belts and stationary pressing, supporting or guiding elements forming a transport nip]
5/028 . . . [by chains]
5/04 . . . by movable tables or carriages (rotary tables B65H 5/18 ; suction gripper or gripper tables B65H 5/101)
5/06 . . . by rollers {or balls, e.g. between rollers (transport by suction rollers B65H 5/226)}
5/062 . . . [between rollers or balls]
5/064 . . . [the axes of the rollers being perpendicular to the plane of the articles]
5/066 . . . [the articles resting on rollers or balls]
5/068 . . . [between one or more rollers or balls and stationary pressing, supporting or guiding elements]
5/08 . . . by grippers, e.g. suction grippers
5/085 . . . [by combinations of endless conveyors and grippers (suction belts B65H 5/224)]
5/10 . . . Reciprocating or oscillating grippers {, e.g. suction or gripper tables}
5/12 . . . Revolving grippers, e.g. mounted on arms, frames or cylinders
5/14 . . . Details of grippers; Actuating-mechanisms therefor
5/16 . . . by pusher, needles, friction, or like devices adapted to feed single articles along a surface or table
5/18 . . . by rotary dials or tables
5/20 . . . by dropping-roller or like device
5/22 . . . by air-blast or suction device (suction grippers B65H 5/08)
5/222 . . . [by suction devices]
5/224 . . . [by suction belts (B65H 11/005 takes precedence)]
5/226 . . . . . . [by suction rollers]
5/228 . . . . . . [by air-blast devices]
5/24 . . . [Feeding articles in overlapping streams, i.e. by separation of articles from a pile]
5/26 . . . Duplicate, alternate, selective, or coacting feeds
5/28 . . . Feeding articles stored in rolled or folded bands
5/30 . . . Opening devices for folded sheets or signatures
5/301 . . . . . . [comprising blade-like means inserted between the parts to be opened]
5/302 . . . . . . [the blade-like means being stationary]
5/303 . . . . . . [comprising movable endless means for opening the folded sheets (B65H 5/308 takes precedence)]
5/305 . . . . . . [comprising rotary means for opening the folded sheets (B65H 5/308 takes precedence)]
5/306 . . . . . . [two opposite rotary means, only one of them having gripping means]
5/307 . . . . . . [two opposite rotary means, both having gripping means]
5/308 . . . . . . [the folded sheets or signatures travelling in hanging position]
5/32 . . . Saddle-like members over which partially-unfolded sheets or signatures are fed to signature-gathering, stitching, or like machines
5/34 . . . Varying the phase of feed relative to the receiving machine
5/36 . . . Article guides or smoothers, e.g. movable in operation
5/38 . . . immovable in operation

7/00 Controlling article feeding, separating, pile-advancing, or associated apparatus, to take account of incorrect feeding, absence of articles, or presence of faulty articles
7/02 . . . by feelers or detectors
7/04 . . . . . . responsive to absence of articles, e.g. exhaustion of pile (B65H 7/14 takes precedence)
7/06 . . . . . . responsive to presence of faulty articles or incorrect separation or feed (B65H 7/14 takes precedence)
7/08 . . . . . . responsive to incorrect front register
7/10 . . . . . . responsive to incorrect side register (controlling transverse register of webs B65H 23/032)
7/12 . . . . . . responsive to double feed or separation
7/125 . . . . . . . [sensing the double feed or separation without contacting the articles]
7/14 . . . . . . by photoelectric feelers or detectors
7/16 . . . Controlling air-supply to pneumatic separators
7/17 . . . Modifying or stopping actuation of separators
7/20 . . . Controlling associated apparatus

9/00 Registering, e.g. orientating, articles; Devices therefor
9/002 . . . [changing orientation of sheet by only controlling movement of the forwarding means, i.e. without the use of stop or register wall]
9/004 . . . [Deskewing sheet by abutting against a stop, i.e. producing a buckling of the sheet]
9/006 . . . . . . [the stop being formed by forwarding means in stand-by]
9/008 . . . . . . [the stop being formed by reversing the forwarding means]
9/02 . . . Gauge pins
9/04 . . . Fixed or adjustable stops or gauges (gauge pins B65H 9/02)
Feeding articles to machines; Separating articles from piles; Pile supports

11/00 Feed tables
11/002 . . [incorporating transport belts]
11/005 . . [Suction belts]
11/007 . . [with front stop arrangements]
11/02 . . angularly adjustable in plane of articles

13/00 Lifting the ends of piles to facilitate the formation of overlapped piles

15/00 Overturning articles
15/02 . . Overturning piles

Feeding articles to machines; Separating articles from piles; Pile supports

Splicing webs (web-delivering apparatus incorporating devices for performing auxiliary operations B65H 35/00, B65H 37/00; associating two or more webs B65H 39/16; winding or unwinding metal band or like flexible metallic material during manufacture B21C; cutting machines or devices in general B26D); inspective printers, e.g. typewriters, ink-ribbon mechanisms B41J; in cinematographic or photographic apparatus G03B; winding, unwinding, or feeding tape to, in, or from, information processing apparatus G06, G11B)

16/00 Unwinding, paying-out webs ([reel-to-reel type web winding and unwinding mechanisms B65H 18/103, B65H 18/145])
16/005 . . [Dispensers, i.e. machines for unwinding only parts of web roll]
16/02 . . Supporting web roll
16/021 . . [Multiple web roll supports]
16/023 . . [rotatable]
16/025 . . [Unwinding apparatus incorporating length-measuring devices]
16/026 . . [Unwinding apparatus incorporating inspecting devices]
16/028 . . [on its outer circumference (B65H 16/08 takes precedence)]
16/04 . . cantilever type
16/06 . . both-ends type
16/08 . . parallel rollers type
16/10 . . Arrangements for effecting positive rotation of web roll
16/103 . . [in which power is applied to web-roll spindle]
16/106 . . [in which power is applied to web roll]

18/00 Winding webs
18/02 . . Supporting web roll
18/021 . . [Multiple web roll supports]
18/023 . . [on its outer circumference]
18/025 . . [Parallel rollers type]
18/026 . . [Cantilever type]
18/028 . . [Both ends type]
18/04 . . Interior-supporting
18/06 . . Lateral-supporting
18/08 . . Web-winding mechanisms
18/085 . . [for non-continuous winding]
18/10 . . Mechanisms in which power is applied to web-roll spindle
18/103 . . [Reel-to-reel type web winding and unwinding mechanisms]
18/106 . . [for several juxtaposed strips]
18/12 . . . to effect step-by-step advancement of web
18/14 . . . Mechanisms in which power is applied to web roll, e.g. to effect continuous advancement of web
18/145 . . . [Reel-to-reel type web winding and unwinding mechanisms]
18/16 . . . by friction roller
18/18 . . . . to effect step-by-step advancement of web
18/20 . . . the web roll being supported on two parallel rollers at least one of which is driven
18/22 . . . by friction band
18/24 . . . . to effect step-by-step advancement of web
18/26 . . . . Mechanisms for controlling contact pressure on winding-web package, e.g. for regulating the quantity of air between web layers
18/28 . . Wound package of webs
19/00 Changing the web roll
19/10 . . in unwinding mechanisms or in connection with unwinding operations
19/102 . . [Preparing the leading end of the replacement web before splicing operation; Adhesive arrangements on leading end of replacement web; Tabs and adhesive tapes for splicing]
19/105 . . . Opening of web rolls; Removing damaged outer layers; Detecting the leading end of a closed web roll]
19/107 . . . [Processing the trailing end of the replaced web after splicing operation, e.g. re-winding it]
19/12 . . Lifting, transporting, or inserting the web roll; Removing empty core
19/123 . . . [with cantilever supporting arrangements]
19/126 . . . [with both-ends supporting arrangements]
19/14 . . . Accumulating surplus web for advancing to machine while changing the web roll
19/18 . . . Attaching, e.g. pasting, the replacement web to the expiring web [adhesive arrangements on leading end of replacement web, tabs and adhesive tapes for splicing B65H 19/102)]
Feeding webs to or from machines; Winding or unwinding webs; Splicing webs

B65H

19/1805 . . . [Flying splicing, i.e. the expiring web moving during splicing contact]
19/181 . . . . [taking place on the replacement roll]
19/1815 . . . . . (the replacement web being stationary prior to splicing contact)
19/1821 . . . . . (the replacement web being accelerated or running prior to splicing contact)
19/1826 . . . . . [taking place at a distance from the replacement roll]
19/1831 . . . . . (the replacement web being stationary prior to splicing contact)
19/1836 . . . . . (the replacement web being accelerated or running prior to splicing contact)
19/1842 . . . . . [standing splicing, i.e. the expiring web being stationary during splicing contact]
19/1847 . . . . . [taking place on the replacement roll]
19/1852 . . . . . [taking place at a distance from the replacement roll]
19/1857 . . . . . [Support arrangement of web rolls]
19/1863 . . . . . [with translatory or arcuated movement of the roll supports]
19/1868 . . . . . [The roll support being of the turret type]
19/1873 . . . . . [with two stationary roll supports carrying alternately the replacement and the expiring roll]
19/1878 . . . . . [with one stationary support for the rolls]
19/1884 . . . . . [Details for effecting a positive rotation of web roll, e.g. accelerating the replacement roll]
19/1889 . . . . . [related to driving arrangements]
19/1894 . . . . . [the replacement web being accelerated through contact with the expiring web]
19/20 . . . Cutting-off the expiring web
19/22 . . . in winding mechanisms or in connection with winding operations
19/2207 . . . . . [the web roll being driven by a winding mechanism of the centre or core drive type]
19/2215 . . . . . [Turret-type with two roll supports]
19/2223 . . . . . [Turret-type with more than two roll supports]
19/223 . . . . . [with roll supports being independently displaceable along a common path]
19/2238 . . . . . [The web roll being driven by a winding mechanism of the nip or tangential drive type (B65H 19/2276 takes precedence)]
19/2246 . . . . . [and the roll being supported on two rollers]
19/2253 . . . . . [and the roll being displaced during the winding operation]
19/2261 . . . . . [Pope-roller]
19/2269 . . . . . [Cradle]
19/2276 . . . . . [The web roll being driven by a winding mechanism of the coreless type]
19/2284 . . . . . [Simultaneous winding at several stations, e.g. slitter-rewinders]
19/2292 . . . . . [Removing cores or mandrels from web roll after winding]
19/24 . . . Accumulating surplus delivered web while changing the web roll
19/26 . . . Cutting-off the web running to the wound web roll
19/262 . . . . . [using a thin or filamentary material which is wound on the new roll]
19/265 . . . . . [using a cutting member moving linearly in a plane parallel to the surface of the web and along a direction crossing the web]
19/267 . . . . . [by tearing or bursting]
19/28 . . . Attaching the leading end of the web to the replacement web-roll core or spindle (cores, formers, supports or holders, e.g. reels, with arrangements for securing ends of material B65H 75/28)
19/283 . . . . . [by applying adhesive to the core]
19/286 . . . . . [by applying adhesive to the web]
19/29 . . . . . . [Securing the trailing end of the wound web to the web roll (cores, formers, supports or holders, e.g. reels, with arrangements for securing ends of material B65H 75/28)]
19/30 . . . . . Lifting, transporting, or removing the web roll; Inserting core
19/305 . . . . . [Inserting core]

20/00 Advancing webs

20/005 . . . (Electrical drive motor control devices therefor)
20/002 . . . by friction roller
20/004 . . . to effect step-by-step advancement of web
20/006 . . . by friction band
20/008 . . . to effect step-by-step advancement of web
20/10 . . . by a feed band against which web is held by fluid pressure, e.g. suction or air blast
20/12 . . . by suction roller
20/14 . . . by direct action on web of moving fluid
20/16 . . . by web-gripping means, e.g. grippers, clips
20/18 . . . to effect step-by-step advancement of web
20/20 . . . by web-penetrating means, e.g. pins
20/22 . . . to effect step-by-step advancement of web
20/24 . . . by looping or like devices
20/26 . . . Mechanisms for advancing webs to or from the inside of web rolls
20/28 . . . Mechanisms for delivering webs in superposed folds and refedding them from the lower end of the folded assemblies
20/30 . . . Arrangements for accumulating surplus web (while changing the web roll B65H 19/24)
20/32 . . . by making loops
20/34 . . . with rollers
20/36 . . . having means to optionally advance the web either in one longitudinal direction or in the opposite longitudinal direction
20/38 . . . by changing the direction of mechanism driving the web-roll spindle
20/40 . . . by changing the direction of mechanism driving the pinch roller

21/00 Apparatus for splicing webs (during web-roll changing B65H 19/00)
21/02 . . . for premarked, e.g. preprinted, webs

23/00 Registering, tensioning, smoothing or guiding webs (registering articles B65H 9/00; in connection with splicing B65H 21/00)
23/005 . . . [Sensing web roll diameter (warning or safety devices responsive to a predetermined diameter B65H 26/08)]
23/002 . . . transversely (by tentering, gripper, or like apparatus operating on fabric webs D06C)
23/0204 . . . [Sensing transverse register of web (and controlling it B65H 23/032)]
23/0208 . . . [with an element engaging the edge of the web]
23/0212 . . . [with an element utilising fluid flow]
23/0216 . . . [with an element utilising photoelectric effect]
Feeding webs to or from machines; Winding or unwinding webs; Splicing webs

23/022 . . by tentering devices
23/025 . . by rollers
23/0251 . . { with a straight axis}
23/0253 . . { with axially movable elements}
23/0255 . . { with axially stretchable elements}
23/0256 . . { with opposed helicoidal windings}
23/0258 . . { with a bowed axis}
23/028 . . by clips
23/032 . . Controlling transverse register of web
23/0322 . . { by acting on edge regions of the web}
23/0324 . . { by acting on lateral regions of the web}
23/0326 . . { by moving the unwinding device}
23/0328 . . { by moving the winding device}
23/035 . . by guide bars
23/038 . . by rollers
23/04 . . longitudinally
23/042 . . { Sensing the length of a web loop (sensing web tension B65H 23/044) }
23/044 . . { Sensing web tension (B65H 23/06, B65H 23/18 take precedence) }
23/046 . . { Sensing longitudinal register of web (B65H 23/18 takes precedence) }
23/048 . . { by positively actuated movable bars or rollers }
23/06 . . by retarding devices, e.g. acting on web-roll spindle
23/063 . . { and controlling web tension }
23/066 . . { Electrical brake devices therefor (B65H 23/063 takes precedence) }
23/08 . . acting on web roll being unwound
23/085 . . { and controlling web tension }
23/10 . . acting on running web (suction retarders B65H 23/24)
23/105 . . { and controlling web tension }
23/12 . . and causing parts thereof to move in opposite directions and in frictional engagement
23/14 . . Tensioning rollers applying braking forces
23/16 . . by weighted or spring-pressed movable bars or rollers
23/18 . . by controlling or regulating the web-advancing mechanism, e.g. mechanism acting on the running web
23/1806 . . { in reel-to-reel type web winding and unwinding mechanism, e.g. mechanism acting on web-roll spindle }
23/1813 . . { acting on web-roll }
23/182 . . { in unwinding mechanisms or in connection with unwinding operations }
23/1825 . . { and controlling web tension }
23/185 . . motor-controlled
23/188 . . in connection with running-web
23/1882 . . { and controlling longitudinal register of web }
23/1884 . . { with step-by-step advancement }
23/1886 . . { Synchronising two or more webs }
23/1888 . . { and controlling web tension }
23/192 . . motor-controlled
23/195 . . in winding mechanisms or in connection with winding operations
23/1955 . . { and controlling web tension }
23/198 . . motor-controlled { (Controlling electrical drive motors therefor) }
23/24 . . by fluid action, e.g. to retard the running web
23/245 . . { Suction retarders }

23/26 . . by transverse stationary or adjustable bars or rollers
23/28 . . by longitudinally-extending strips, tubes, plates, or wires (flexible tapes or bands B65H 23/30)
23/30 . . by longitudinally-extending flexible tapes or bands
23/32 . . Arrangements for turning or reversing webs
23/34 . . Apparatus for taking-out curl from webs

26/00 Warning or safety devices, e.g. automatic fault detectors, stop-motions, for web-advancing mechanisms (safety devices in general F16P; investigating chemical or physical properties of materials in general G01N; indicating devices in general G08B)

26/02 . . responsive to presence of irregularities in running webs
26/025 . . { responsive to web breakage }
26/04 . . for variation in tension
26/06 . . responsive to predetermined lengths of webs
26/063 . . { responsive to detection of the trailing edge }
26/066 . . { responsive to information, e.g. printed mark, on the web or web roll }
26/08 . . responsive to a predetermined diameter

27/00 Special constructions of feed or guide rollers and surfaces thereof (tentering rollers B65H 23/02) ; rollers in general F16C 13/00)

Delivering articles from machines; Piling articles; Article or web delivery apparatus incorporating devices for performing specified auxiliary operations; Associating or gathering articles or webs; Machines for separating superposed webs

29/00 Delivering or advancing articles from machines; Advancing articles to or into piles
29/001 . . { Adaptations of counting devices (to feeding of articles to machines B65H 5/002) }
29/003 . . { by grippers (B65H 29/02 takes precedence) }
29/005 . . { by chains or bands having mechanical grippers engaging the side edges of articles, e.g. newspaper conveyors }
29/006 . . { Winding articles into rolls }
29/008 . . { Winding single articles into single rolls }
29/02 . . by mechanical grippers engaging the leading edge only of the articles
29/04 . . the grippers being carried by endless chains or bands
29/041 . . { and introducing into a pile (slowing-down from grippers B65H 29/683) }
29/042 . . { Intermediate conveyors, e.g. transferring devices }
29/044 . . . . { conveying through a machine }
29/045 . . . . { Details of grippers }
29/047 . . . . { Gripper opening devices }
29/048 . . . . { Self-opening and -closing grippers }
29/06 . . the grippers being carried by rotating members
29/08 . . the grippers being oscillated in arcuate paths
29/10 . . the grippers being reciprocated in rectilinear paths
29/12 . . by means of the nip between two, or between two sets of, moving tapes or bands { or rollers }
29/125 . . { between two sets of rollers }
29/14 . . and introducing into a pile
Delivering articles from machines; Piling articles; Article or web delivery apparatus incorporating devices

29/145 . . . [the pile being formed between the two, or between the two sets of, tapes or bands or rollers]
29/16 . . . by contact of one face only with moving tapes, bands, or chains {[(with suction belts B65H 29/242)]}
29/18 . . . and introducing into a pile
29/20 . . . by contact with rotating friction members, e.g. rollers, brushes, or cylinders {[(with suction rollers B65H 29/243)]}
29/22 . . . and introducing into a pile
29/24 . . . by air blast or suction apparatus {[(B65H 5/22 takes precedence; ) dropping articles from suction carriers B65H 29/32 ; ((pneumatic brakes B65H 29/686)]}
29/241 . . . [Suction devices]
29/242 . . . [Suction bands or belts]
29/243 . . . [Suction rollers]
29/245 . . . [Air blast devices]
29/246 . . . [acting on stacking devices]
29/247 . . . . . . . . [blowing on upperside of the sheet]
29/248 . . . . . . . . [with coanda effect (separating from a stack B65H 3/14)]
29/26 . . . by dropping [the articles]
29/28 . . . from mechanical grippers (grippers engaging the leading edge only B65H 5/202)
29/30 . . . from magnetic holders
29/32 . . . from pneumatic, e.g. suction, carriers
29/34 . . . from supports slid from under the articles
29/36 . . . from tapes, bands, or rollers rolled from under the articles
29/38 . . . by movable piling or advancing arms, frames, plates, or like members with which the articles are maintained in face contact
29/40 . . . Members rotated about an axis perpendicular to direction of article movement, e.g. star-wheels formed by S-shaped members
29/42 . . . Members rotated about an axis parallel to direction of article movement, e.g. helices
29/44 . . . Members oscillated in arcuate paths
29/46 . . . Members reciprocated in rectilinear path
29/48 . . . by tables arranged to be tilted to cause sliding of articles
29/50 . . . Piling apparatus of which the discharge point moves in accordance with the height to the pile
29/51 . . . piling by collecting on the periphery of cylinders
29/52 . . . Stationary guides or smoothers
29/54 . . . Article strippers, e.g. for stripping from advancing elements
29/56 . . . for stripping from elements or machines {[(for electrophoretic machines G03G)]}
29/58 . . . Article switches or diverters
29/585 . . . [taking samples from the main stream]
29/60 . . . diverting the stream into alternative paths {[(B65H 29/62 takes precedence)]}
29/62 . . . diverting faulty articles from the main streams (control devices detecting faulty articles B65H 43/04)
29/64 . . . directing the components of composite articles into separate paths
29/66 . . . Advancing articles in overlapping streams
29/6609 . . . [forming an overlapping stream (by separation of articles from a pile B65H 5/24)]
29/6618 . . . . . . . . [upon transfer from a first conveyor to a second conveyor advancing at slower speed]

29/6627 . . . . . . . . [in combination with auxiliary means for overlapping articles]
29/6636 . . . . . . . . [in combination with auxiliary means for underlapping articles]
29/6645 . . . . . . . . [buffering an overlapping stream of articles (winding articles into rolls B65H 29/006)]
29/6654 . . . . . . . . [changing the overlapping figure]
29/6663 . . . . . . . . [reversing the overlapping figure (round stack feeder B65H 1/225)]
29/6672 . . . . . . . . [dividing an overlapping stream into two or more streams; (articles switches or diverters B65H 29/58)]
29/6681 . . . . . . . . [merging two or more streams into an overlapping stream]
29/669 . . . . . . . . [ending an overlapping stream]
29/68 . . . . . . . . [Reducing the speed of articles as they advance
29/683 . . . . . . . . [Slowing-down from chain delivery (B65H 29/686 takes precedence)
29/686 . . . . . . . . [Pneumatic brakes]
29/70 . . . . . . . . Article bending or stiffening arrangements

31/00 Pile receivers (carriers used for associating, collating or gathering articles B65H 39/00)
31/02 . . . . . . . . with stationary end support against which pile accumulates
31/04 . . . . . . . . with movable end support arranged to recede as pile accumulates
31/06 . . . . . . . . the articles being piled on edge
31/08 . . . . . . . . the articles being piled one above another
31/10 . . . . . . . . and applied at the top of the pile
31/12 . . . . . . . . Devices relieving the weight of the pile or permitting or effecting movement of the pile end support during piling
31/14 . . . . . . . . Springs (fluid springs B65H 31/16)
31/16 . . . . . . . . Fluid-pressure devices
31/18 . . . . . . . . Positively-acting mechanical devices
31/20 . . . . . . . . adjustable for different article sizes
31/22 . . . . . . . . removable or interchangeable
31/24 . . . . . . . . multiple or compartmented, e.d. for alternate, programmed, or selective filling
31/26 . . . . . . . . Auxiliary devices for retaining articles in the pile
31/28 . . . . . . . . Bands, chains, or like moving receivers (for articles piled on edge B65H 31/06)
31/30 . . . . . . . . Arrangements for removing completed piles (bands, chains, or like moving receivers B65H 31/28)
31/3009 . . . . . . . . [by dropping, e.g. removing the pile support from under the pile]
31/3018 . . . . . . . . [from opposite part-support elements, e.g. operated simultaneously]
31/3027 . . . . . . . . [by the nip between moving belts or rollers (pile being formed between belts or rollers B65H 29/145)]
31/3036 . . . . . . . . [by gripping the pile]
31/3045 . . . . . . . . [on the outermost articles of the pile for clamping the pile]
31/3054 . . . . . . . . [by moving the surface supporting the lowermost article of the pile, e.g. by using belts or rollers]
31/3063 . . . . . . . . [by special supports like carriages, containers, trays, compartments, plates or bars, e.g. moved in a closed loop]
31/3072 . . . . . . . . [by moving a surface supporting the pile of articles on edge, e.g. by using belts or carriages]
31/3081 . . . . . . . . [by acting on edge of the pile for moving it along a surface, e.g. by pushing]
Delivering articles from machines; Piling articles; Article or web delivery apparatus incorporating devices

35/00 Delivering articles from cutting or line-perforating machines; Article or web delivery apparatus incorporating cutting or line-perforating devices, e.g. of the kinds specified below (cutting or perforating machines or devices in general B26D, B26F)

35/0006 . . . [Article or web delivery apparatus incorporating cutting or line-perforating devices]
35/0013 . . . [and applying the article or the web by adhesive to a surface (B65H 35/002 takes precedence)]
35/002 . . . [Hand-held or table apparatus (B65H 35/006 takes precedence)]
35/0026 . . . [for delivering pressure-sensitive adhesive tape]
35/0033 . . . . [and affixing it to a surface (B65H 35/004 takes precedence)]
35/004 . . . . [simultaneously with a second roll, e.g. masking tape]
35/0046 . . . . [with means for moistening or coating the articles or webs, or applying adhesive thereto]
35/0053 . . . . [and affixing it to a surface]
35/006 . . . . [with means for delivering a predetermined length of tape]
35/0066 . . . . [this length being adjustable]
35/0073 . . . . [Details]
35/008 . . . . [Arrangements or adaptations of cutting devices]
35/0086 . . . . [using movable cutting elements]
35/0093 . . . . [Arrangements or adaptations of length measuring devices]
35/02 . . . from or with longitudinal slitters or perforators
35/04 , from or with transverse cutters or perforators
35/06 . . . from or with blade, e.g. shear-blade, cutters or perforators (from or with revolving blade B65H 35/08)
35/08 . . . from or with revolving, e.g. cylinder, cutters or perforators

35/10 . . . from or with devices for breaking partially-cut or perforated webs, e.g. bursters
37/00 Article or web delivery apparatus incorporating devices for performing specified auxiliary operations (incorporating cutting or line-perforating devices B65H 35/00)
37/002 . . . [Web delivery apparatus, the web serving as support for articles, material or another web]
37/005 . . . [Hand-held apparatus]
37/007 . . . [Applicators for applying coatings, e.g. correction, colour or adhesive coatings]
37/02 . . . for applying adhesive (and securing together B65H 37/04)
37/04 . . . for securing together articles or webs, e.g. by adhesive, stitching or stapling (adhering replacement to expiring web during change of web roll B65H 19/18)
37/06 . . . for folding
39/00 Associating, collating or gathering articles or webs (machines for both collating or gathering and permanently attaching together sheets or signatures B42C 1/00)
39/02 . . . Associating, collating or gathering articles from several sources
39/04 . . . from piles
39/041 . . . . the piles being disposed in rotary carriers
39/042 . . . . the piles being disposed in superposed carriers
39/043 . . . . the piles being disposed in juxtaposed carriers
39/045 . . . . by collecting in rotary carriers
39/05 . . . . by collecting in superposed carriers
39/055 . . . . by collecting in juxtaposed carriers
39/06 . . . from delivery streams
39/065 . . . . by collecting in rotary carriers
39/07 . . . . by collecting in superposed carriers
39/075 . . . . by collecting in juxtaposed carriers
39/10 . . . Associating articles from a single source, to form, e.g. a writing-pad ((laminating B32B 37/00, B32B 38/00))
39/105 . . . in rotary carriers
39/11 . . . in superposed carriers
39/115 . . . in juxtaposed carriers
39/14 . . . Associating sheets with webs
39/16 . . . Associating two or more webs
41/00 Machines for separating superposed webs
43/00 Use of control, checking, or safety devices, e.g. automatic devices comprising an element for sensing a variable
43/02 . . . detecting, or responding to, absence of articles (B65H 43/08 takes precedence)
43/04 . . . detecting, or responding to, presence of faulty articles (B65H 43/08 takes precedence; diverting faulty articles from main streams B65H 29/62)
43/06 . . . detecting, or responding to, completion of pile (B65H 43/08 takes precedence)
43/08 . . . Photoelectric devices

Folding or unfolding thin material
45/00 Folding thin material (specially adapted for the manufacture or treatment of particular products, see appropriate subclasses, e.g. D06F 89/00)
Folding or unfolding thin material

45/02 . Folding limp material [(shaping of plastics or by bending or folding B29C 53/00; folding sheets, blanks or webs for box, carton, envelope or bag making B31B 50/26, B31B 70/26; shaping of paper or cardboard by bending or folding B31F 10003)] without application of pressure to define or form crease lines (winding or unwinding fabrics for feeding to or from machines B65H 1600; B65H 2700; folding garments for packaging purposes B65B; folding fabrics in sewing machines D05B).

45/04 . Folding sheets

45/06 . Folding webs (B65H 20/28 takes precedence)

45/08 . Longitudinally

45/09 . Doubling, i.e. folding into half of width

45/10 . Transversely

45/101 . in combination with laying, i.e. forming a zig-zag pile

45/1015 . . . . [Folding webs provided with predefined fold lines; Refolding prefolded webs, e.g. fanfolded continuous forms]

45/103 . . . . by a carriage which reciprocates above the laying station

45/105 . . . . coating with fold holders

45/107 . . . . by means of swinging or reciprocating guide bars

45/109 . . . . Registering or counting the folds; Detecting irregularities in the zig-zag pile

45/12 . Folding articles or webs with application of pressure to define or form crease lines (B65H 20/28 takes precedence; pleating, kitting or goffering textile fabrics D06J).

45/14 . Buckling folders

45/141 . . . . [with noise reducing means]

45/142 . . . . [Pocket-type folders]

45/144 . . . . [Pockets or stops therefor]

45/145 . . . . [Circular pockets]

45/147 . . . . [folding rollers therefor]

45/148 . . . . [diverters therefor]

45/16 . . . . Rotary folders

45/161 . . . . [Flying tuck folders]

45/162 . . . . [with folding jaw cylinders]

45/163 . . . . [Details of folding jaws therefor]

45/164 . . . . [Details of folding blades therefor]

45/165 . . . . [Details of sheet gripping means therefor]

45/166 . . . . [having an adjustable circumference]

45/167 . . . . [having associated sheet guide means]

45/168 . . . . [having changeable mode of operation]

45/18 . . . . Oscillating or reciprocating blade folders (carried on rotary members B65H 45/16)

45/20 . . . . Zig-zag folders (B65H 45/228 takes precedence)

45/22 . . . . Longitudinal folders, i.e. for folding moving sheet material parallel to the direction of movement

45/221 . . . . [incorporating folding triangles]

45/223 . . . . [Details of folding triangles]

45/225 . . . . [Arrangements of folding triangles]

45/226 . . . . [Positional adjustment of folding triangles]

45/228 . . . . [Zig-zag folders]

45/24 . . . . Interfolding sheets, e.g. cigarette or toilet papers

45/26 . . . . Folding in combination with unpiling (unpiling B65H 3/00)

45/28 . . . . Folding in combination with cutting (cutting machines B26D)

45/30 . . . . Folding in combination with creasing, smoothing or application of adhesive (folding or adhesive application in article or web delivering B65H 37/00)

47/00 Unfolding thin limp material (B65H 20/28 takes precedence; opening devices for sheets or signatures B65H 5/30)

Unwinding, paying-out, forwarding, winding, coiling, or depositing, filamentary material (devices specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material B65H 75/34; working and processing wire B21F, B21G; unwinding, paying-out, forwarding, or winding ropes or cables in load-moving apparatus B61B; B65G; B66; creels, warping, beaming, or leasing machines or methods for textile manufacturing purposes D02H).

49/00 Unwinding or paying-out filamentary material; Supporting, storing or transporting packages from which filamentary material is to be withdrawn or paid-out (winding B65H 54/00; bobbins, tubes or other cores for packages B65H 75/00)

49/02 . Methods or apparatus in which packages do not rotate

49/04 . Package-supporting devices

49/06 . . . for a single operative package

49/08 . . . enclosing the package

49/10 . . . for one operative package and one or more reserve packages

49/12 . . . the reserve packages being mounted to permit manual or automatic transfer to operating position

49/14 . . . for several operative packages

49/16 . . . Stands or frameworks

49/18 . Methods or apparatus in which packages rotate (flyers or other guides assisting paying-out B65H 57/00; supports or holders, for storing and repeatedly paying-out and rewinding lengths of material provided for particular purposes B65H 75/34)

49/20 . . . Package-supporting devices

49/205 . . . [Hand-held or portable dispensers]

49/22 . . . Overhead suspension devices

49/24 . . . Rollers

49/26 . . . Axial shafts or spigots

49/28 . . . Turntables, i.e. package resting on a table (having also means for clamping the package B65H 49/30)

49/30 . . . Swivels or skiin holders

49/305 . . . [with axially adjustable or removable elements for retaining the package]

49/32 . . . Stands or frameworks

49/321 . . . [characterised by features enabling their folding or dismantling]

49/322 . . . [Enclosing boxes with supporting means for the package or reel during unwinding]

49/324 . . . [Constructional details]

49/325 . . . [Arrangements or adaptations for supporting the shafts, e.g. saddle type shaft bearings]

49/327 . . . [Arrangements or adaptations for attachment to a wall, a post or the like]
Unwinding, paying-out, forwarding, winding, coiling, or depositing, filamentary material

B65H

54/00 Winding,coiling,or depositing filamentary material (cores,formers, holders,cans or receptacles B65H 75/02)

54/02 Winding and traversing material on to reels, bobbins, tubes, or like package cores or formers

54/023 [Hank to spool winders]

54/026 [Doubling winders, i.e. for winding two or more parallel yarns on a bobbin, e.g. in preparation for twisting or weaving]

54/04 for making packages with closely-wound convolutions

54/06 for making cross-wound packages

54/08 Precision winding arrangements

54/10 for making packages of specified shapes or on specified types of bobbins, tubes, cores, or formers

54/103 [Forming frusto-conical packages or forming packages on frusto-conical bobbins, tubes, cores or formers]

54/106 [Manual or other small, compact or portable winding devices for forming packages for different purposes]

54/12 on flanged bobbins or spools (B65H 54/20 takes precedence)

54/14 on tubes, cores, or formers having generally parallel sides, e.g. cops or packages to be loaded into loom shuttles

54/16 forming bottle bobbin packages

54/18 forming spoons to be loaded into sewing, lace, embroidery, or like machines

54/20 forming multiple packages

54/205 [the winding material being continuously transferred from one bobbin to the adjacent one]

54/22 Automatic winding machines, i.e. machines with servicing units for automatically performing end-finding, interconnecting of successive lengths of material, controlling and fault-detecting of the running material and replacing or removing of full or empty cores

54/24 having a plurality of winding units moving along an endless path past one or more fixed servicing units

54/26 having one or more servicing units moving along a plurality of fixed winding units

54/28 Traversing devices; Package-shaping arrangements (arrangements for preventing ribbon winding B65H 54/38; grooved, slotted, or split drums for driving of packages B65H 54/46)

54/2803 [with a traversely moving package]

54/2806 [Traversing devices driven by cam]

54/2809 [rotating grooved cam (driving split drums B65H 54/50)]

54/2812 [with a traversing guide running in the groove]

54/2815 [heart-shaped cam]

54/2818 [Traversing devices driven by rod]

54/2821 [Traversing devices driven by belts or chains (B65H 54/2836 takes precedence)]

54/2824 [with at least two traversing guides travelling in opposite directions]

54/2827 [Traversing devices with a pivotally mounted guide arm]

54/283 [Traversing devices driven by pneumatic or hydraulic means]

54/2833 [Traversing devices driven by electromagnetic means]

54/2836 [with a rotating guide for traversing the yarn]

54/2839 [counter rotating guides, e.g. wings]

54/2842 [grooved, slotted, or split drums]
Unwinding, paying-out, forwarding, winding, coiling, or depositing, filamentary material

54/2845 . . . . ["screw" type Owens Fiberglas]
54/2848 . . . . [Arrangements for aligned winding (reels with grooves or grooved elements for aligned winding B65H 75/265)]
54/2851 . . . . [by pressing the material being wound against the drum, flange or already wound material, e.g. by fingers or rollers; guides moved by the already wound material (B65H 54/2869 takes precedence)]
54/2854 . . . . [Detection or control of aligned winding or reversal]
54/2857 . . . . [Reversal control]
54/286 . . . . [by detection that the material has reached the flange or the reel end]
54/2863 . . . . . . [the flange acting on the material, e.g. provoking wire climbing or incident angle changing]
54/2866 . . . . [by detection of position, or distance made of the traverser]
54/2869 . . . . [Control of the rotating speed of the reel or the traversing speed for aligned winding]
54/2872 . . . . [by detection of the incidence angle]
54/2875 . . . . [by detecting or following the already wound material, e.g. contour following]
54/2878 . . . . [by detection of incorrect conditions on the wound surface, e.g. material climbing on the next layer, a gap between windings]
54/2881 . . . . [Traversing devices with a plurality of guides for winding on a plurality of bobbins (forming multiple packages B65H 54/20)]
54/2884 . . . . [Microprocessor-controlled traversing devices in so far the control is not special to one of the traversing devices of groups B65H 54/2803 - B65H 54/325 or group B65H 54/38]
54/2887 . . . . [detecting the position of the yarn guide]
54/289 . . . . [stopping the yarn guide in a predetermined position]
54/2893 . . . . [Superoosed traversing, i.e. traversing or other movement superposed on a traversing movement]
54/2896 . . . . [Flyers]
54/30 . . . . with thread guides reciprocating or oscillating with fixed stroke [(B65H 54/2803 - B65H 54/2896 take precedence)]
54/32 . . . . with thread guides reciprocating or oscillating with variable stroke
54/325 . . . . [in accordance with growth of the package]
54/34 . . . . for laying subsidiary winding, e.g. transfer tails
54/343 . . . . [when starting winding on an empty bobbin]
54/346 . . . . [on or outwardly of the fully wound yarn package]
54/36 . . . . Yarn-guide advancing or raising mechanisms, e.g. cop-building arrangements
54/365 . . . . [for cops of pirn winding machine (B65H 54/14 takes precedence)]
54/38 . . . . Arrangements for preventing ribbon winding (; Arrangements for preventing irregular edge forming, e.g. edge raising or yarn falling from the edge)
54/381 . . . . [Preventing ribbon winding in a precision winding apparatus, i.e. with a constant ratio between the rotational speed of the bobbin spindle and the rotational speed of the traversing device driving shaft]
54/383 . . . . [in a stepped precision winding apparatus, i.e. with a constant wind ratio in each step]
54/385 . . . . [Preventing edge raising, e.g. creeping arrangements]
54/386 . . . . [with energy storing means for recovering the kinetic energy at the end of the traversing stroke]
54/388 . . . . [Preventing the yarn from falling off the edge of the package]
54/40 . . . . Arrangements for rotating packages
54/42 . . . . in which the package, core, or former is rotated by frictional contact of its periphery with a driving surface
54/44 . . . . in which the package, core, or former is engaged with, or secured to, a driven member rotatable about the axis of the package
54/46 . . . . Package drive drums
54/48 . . . . Grooved drums
54/485 . . . . [with an auxiliary guide]
54/50 . . . . Slotted or split drums
54/52 . . . . Drive contact pressure control, e.g. pressing arrangements
54/54 . . . . Arrangements for supporting cores or formers at winding stations; Securing cores or formers to driving members
54/543 . . . . [Securing cores or holders to supporting or driving members, e.g. collapsible mandrels]
54/547 . . . . Cantilever supporting arrangements
54/553 . . . . Both-ends supporting arrangements
54/56 . . . . Winding of hanks or skeins
54/58 . . . . Swifts or reels adapted solely for the formation of hanks or skeins (B65H 49/30 takes precedence)
54/585 . . . . [Reels for rolling tape-like material, e.g. flat hose or strap, into flat spiral form; Means for retaining the roll after removal of the reel]
54/60 . . . . Devices for domestic use
54/62 . . . . Binding of skeins
54/64 . . . . Winding of balls; ([forming hollow objects by winding on to fusible or soluble cores, e.g. forming pressure vessels B29C 53/56)]
54/66 . . . . Winding yarns into balls
54/68 . . . . Winding on to cards or other flat cores, e.g. of star form
54/70 . . . . Other constructional features of yarn-winding machines
54/702 . . . . [Arrangements for confining or removing dust (for spinning D01H 11/00; cleaning in general B09B)]
54/705 . . . . [Arrangements for reducing hairiness of the filamentary material]
54/707 . . . . [Suction generating system]
54/71 . . . . Arrangements for severing filamentary materials
54/72 . . . . Framework; Casings; Coverings
54/74 . . . . Driving arrangements (arrangements for preventing ribbon winding B65H 54/38; arrangements for rotating packages B65H 54/40)
54/76 . . . . Depositing materials in cans or receptacles
54/78 . . . . Apparatus in which the depositing device or the receptacle is reciprocated
Unwinding, paying-out, forwarding, winding, coiling, or depositing, filamentary material

54/80 . . . Apparatus in which the depositing device or the receptacle is rotated
54/82 . . . and in which coils are formed before deposition
54/84 . . . Arrangements for compacting materials in receptacles
54/86 . Arrangements for taking-up waste material before or after winding or depositing
54/88 . . . by means of pneumatic arrangements, e.g. suction guns

55/00 Wound packages of filamentary material
55/005 . . . [with two or more filaments wound in parallel on the bobbin]
55/02 . Self-supporting packages
55/04 . characterised by method of winding
55/043 . . . [the yarn paying off through the centre of the package]
55/046 . . . [packages having a radial opening through which the material will pay off]

57/00 Guides for filamentary materials; Supports therefore
57/003 . . . [Arrangements for threading or unthreading the guide]
57/006 . . . [Traversing guides]
57/02 . Stationary rods or plates
57/04 . Guiding surfaces within slots or grooves
57/06 . Annular guiding surfaces; Eyes, e.g. pigtails
57/08 . . . formed of wire or the like
57/10 . . . with flared apertures
57/12 . Tubes
57/14 . Pulleys, rollers, or rotary bars
57/16 . formed to maintain a plurality of filaments in spaced relation
57/18 . mounted to facilitate unwinding of material from packages
57/20 . . . Flyers (for inserting twist D01H)
57/22 . adapted to prevent excessive ballooning of material
57/24 . . . with wear-resistant surfaces
57/26 . . . Supports for guides
57/28 . Reciprocating or oscillating guides (traversing devices for winding, coiling, or depositing filamentary material B65H 54/28)

59/00 Adjusting or controlling tension in filamentary material, e.g. for preventing snarling; Applications of tension indicators
59/005 . . . [Means compensating the yarn tension in relation with its moving due to traversing arrangements]
59/02 . by regulating delivery of material from supply package (by contact of package with support B65H 49/02; by controlling speed of driving mechanism of unwinding or paying-out devices B65H 59/38)
59/04 . . . by devices acting on package or support
59/043 . . . . . . [with a braking force varying proportionally to the diameter or the weight of the package being unwound]
59/046 . . . . . . [varying proportionally to the weight only]
59/06 . . . by devices acting on material leaving the package
59/08 . by contact of running length of material with supply package

59/10 . by devices acting on running material and not associated with supply or take-up devices (by controlling speed of driving mechanism of material-forwarding devices B65H 59/38)
59/105 . . . [the material being subjected to the action of a fluid]
59/12 . Stationary elements arranged to deflect material from straight path
59/14 . . . and provided with surfaces imposing additional retarding forces on material
59/16 . . Braked elements rotated by material
59/18 . . Driven rotary elements (material-forwarding devices B65H 51/00)
59/20 . . Co-operating surfaces mounted for relative movement
59/22 . . . and arranged to apply pressure to material
59/225 . . . . . . [Tension discs]
59/24 . . . . . . Surfaces movable automatically to compensate for variation in tension
59/26 . . . and arranged to deflect material from straight path
59/28 . . . the surfaces being urged towards each other
59/30 . . . . . . Surfaces movable automatically to compensate for variation in tension
59/32 . . . . . . the surfaces being urged away from each other
59/34 . . . . . . . . . . . . Surfaces movable automatically to compensate for variation in tension
59/36 . . . . . Floating elements compensating for irregularities in supply or take-up of material (buffer storage devices B65H 51/20)
59/38 . . . by regulating speed of driving mechanism of unwinding, paying-out, forwarding, winding, or depositing devices, e.g. automatically in response to variations in tension
59/381 . . . . . (using pneumatic or hydraulic means)
59/382 . . . . . (using mechanical means)
59/384 . . . . . (using electronic means)
59/385 . . . . . [Regulating winding speed]
59/387 . . . . . [Regulating unwinding speed]
59/388 . . . . . [Regulating forwarding speed]
59/40 . . . . . Applications of tension indicators

61/00 Applications of devices for metering predetermined lengths of running material (of general application G01B)
61/005 . . . [for measuring speed of running yarns]
63/00 Warning or safety devices, e.g. automatic fault detectors, stop-motions (safety devices in general F16P; indicating devices in general G08B) ; Quality control of the package
63/003 . . . [responsive to winding of yarns around rotating cylinders]
63/006 . . . [quality control of the package]
63/002 . . . responsive to reduction in material tension, failure of supply, or breakage, of material
63/024 . . . responsive to breakage of materials
63/028 . . . characterised by the detecting or sensing element
63/032 . . . . . . . . . . . . electrical or pneumatic
63/0321 . . . . . . . . . . . . [using electronic actuators]
63/0322 . . . . . . . . . . . . . [using capacitor sensing means, i.e. the defect signal is a variation of impedance]
Unwinding, paying-out, forwarding, winding, coiling, or depositing, filamentary material

67/04 . Arrangements for removing completed take-up packages and (or) replacing by cores, formers, or empty receptacles at winding or depositing stations; Transferring material between adjacent full and empty take-up elements {Arrangement of the service carriage B65H 54/26)}

67/0405 . {Arrangements for removing completed take-up packages or for loading an empty core (B65H 67/044 takes precedence)

67/0411 . [for removing completed take-up packages]

67/0417 . [for loading an empty core]

67/0422 . [for loading a starter winding, i.e. a spool core with a small length of yarn wound on it; preparing the starter winding]

67/0428 . [for cans, boxes and other receptacles]

67/0434 . [Transferring material devices between full and empty cans]

67/044 . Continuous winding apparatus for winding on two or more winding heads in succession

67/048 . having winding heads arranged on rotary capstan head

67/052 . having two or more winding heads arranged in parallel to each other

67/056 . having two or more winding heads arranged in series with each other

67/06 . Supplying cores, receptacles, or packages to, or transporting from, winding or depositing stations (between spinning and winding machines D01H 9/18, e.g. transporting cans D01H 9/185)

67/061 . [Orientating devices]

67/062 . [Sorting devices for full/empty packages]

67/063 . [Marking or identifying devices for packages]

67/064 . [Supplying or transporting cross-wound packages, also combined with transporting the empty core]

67/065 . [Manipulators with gripping or holding means for transferring the packages from one station to another, e.g. from a conveyor to a creel trolley]

67/066 . [Depositing full or empty bobbins into a container or stacking them]

67/067 . [Removing full or empty bobbins from a container or a stack]

67/068 . [Supplying or transporting empty cores]

67/069 . [Removing or fixing bobbins or cores from or on the vertical peg of trays, pallets or the pegs of a belt]

67/08 . Automatic end-finding and material-interconnecting arrangements (knot-tying devices B65H 69/00)

67/081 . [acting after interruption of the winding process, e.g. yarn breakage, yarn cut or package replacement]

67/083 . [handling the yarn-end of the new supply package]

67/085 . [end-finding at the take-up package, e.g. by suction and reverse package rotation]

67/086 . [Preparing supply packages]

67/088 . [Prepositioning the yarn end into the interior of the supply package]

69/00 Methods of, or devices for, interconnecting successive lengths of material; Knot-tying devices {Control of the correct working of the interconnecting device}

69/02 . by means of adhesives
Unwinding, paying-out, forwarding, winding, coiling, or depositing, filamentary material

B65H

Methods, apparatus, or devices of general interest or not otherwise provided for in connection with the handling of webs, tapes, or filamentary materials (Unwinding, paying-out, forwarding or winding ropes or cables in load-moving apparatus B61B, B65G, B66)

75/10 Arrangements to facilitate severing of material

75/12 with a single end flange (e.g. with a conical end flange); formed with one end of greater diameter than the barrel

75/14 with two end flanges

75/141 [covers therefor]
Methods, apparatus, or devices of general interest or not otherwise provided for in connection with the handling of...

75/34  . . . . specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material provided for particular purposes, e.g. anchored hoses, power cables (retractors for storing flexible hoses as accessories of dental work stands A61G 15/18; vehicle safety belt retractors B60R 22/34; hose-storing devices in apparatus or devices for transferring liquids from bulk storage containers or reservoirs into vehicles or portable containers B67D 7/40; clothes-line supports D06F 53/00; spring drums for liftable blinds with horizontal lamellae E06B 9/322; spring drums or tape drums for roll-type closures or roller blinds E06B 9/56; hauling- or hoisting-chains with arrangements for holding electric cables, hoses or the like F16G 13/16; devices for guiding pipes, cables or protective tubing, between relatively movable points, e.g. movable channels, F16L 3/01; flexible rulers or tapes with scales G01B 3/10; electrical features of stored material, see the relevant subclasses, e.g. H02G)

75/36  . . . . without essentially involving the use of a core or former internal to a stored package of material, e.g. with stored material housed within casing or container, or intermittently engaging a plurality of supports as in sinuous or serpentine fashion

75/362  . . . . [with stored material housed within a casing or container (B65H 75/368 takes precedence)]

75/364  . . . . [the stored material being coiled]

75/366  . . . . [with stored package of material loosely hanging on a support, e.g. a hose hanger]

75/368  . . . . [with pulleys]

75/38  . . . . involving the use of a core or former internal to, and supporting, a stored package of material

75/40  . . . . mobile or transportable

75/403  . . . . [Carriage with wheels]

75/406  . . . . [hand-held during use (B65H 75/48, B65H 75/473 take precedence)]

75/42  . . . . attached to, or forming part of, mobile tools, machines or vehicles

75/425  . . . . [attached to, or forming part of a vehicle, e.g. truck, trailer, vessel]

75/44  . . . . Constructional details

75/4402  . . . . [Guiding arrangements to control paying-out and re-storing of the material (guides per se B65H 57/00)]

75/4405  . . . . [Traversing devices; means for orderly arranging the material on the drum]

75/4407  . . . . [positively driven, e.g. by a transmission between the drum and the traversing device]

75/441  . . . . [with a handle on the guide for manual operation]

75/4413  . . . . [with a traversely moving drum]

75/4415  . . . . [Guiding ribs on the drum]

75/4418  . . . . [Arrangements for stopping winding or unwinding; Arrangements for releasing the stop means]

75/4421  . . . . [acting directly on the material]

75/4423  . . . . [Manual stop or release button]

75/4426  . . . . [Stopping at the end of winding or unwinding]

75/4428  . . . . [acting on the reel or on a reel blocking mechanism]

75/4431  . . . . [Manual stop or release button]

75/4434  . . . . [actuated by pulling on or imparting an inclination to the material]

75/4436  . . . . [Arrangements for yieldably braking the reel or the material for moderating speed of winding or unwinding]

75/4439  . . . . [acting directly on the material]

75/4442  . . . . [acting on the reel]

75/4444  . . . . [with manually adjustable brake pads]

75/4447  . . . . [centrifugally]

75/4449  . . . . [Arrangements or adaptations to avoid movable contacts or rotary couplings, e.g. by the use of an expansion chamber for a length of the cord or hose]

75/4452  . . . . [Simultaneous winding and unwinding of the material, e.g. winding or unwinding on a stationary drum while respectively unwinding or winding on a rotating drum using a planetary guiding roller]

75/4455  . . . . [using a planetary assembly coaxially rotating around a central drum]

75/4457  . . . . [Arrangements of the frame or housing]

75/446  . . . . [for releasably or permanently attaching the frame to a wall, on a floor or on a post or the like]

75/4463  . . . . [Swaying attachment]

75/4465  . . . . [Foldable or collapsible]

75/4468  . . . . [Tubular frame]

75/4471  . . . . [Housing enclosing the reel]

75/4473  . . . . [without arrangements or adaptations for rotating the core or former (cores or formers which are not specially adapted for repeatedly paying-out and re-storing lengths of material B65H 75/02)]

75/4476  . . . . [with stored material wound around two spaced supports]

75/4478  . . . . [relating to handling of fluids]

75/4481  . . . . [Arrangements or adaptations for driving the reel or the material (by a spring B65H 75/48)]

75/4484  . . . . [Electronic arrangements or adaptations for controlling the winding or unwinding process, e.g. with sensors]

75/4486  . . . . [Electric motors]

75/4489  . . . . [Fluid motors]

75/4492  . . . . [Manual drives]

75/4494  . . . . [Arrangements or adaptations of the crank]

75/4497  . . . . [driving by the wheels of the carriage or vehicle]

75/48  . . . . Automatic restoring devices (B65H 75/4418 takes precedence)

75/483  . . . . [Balance reel]

75/486  . . . . [Arrangements or adaptations of the spring motor]

75/50  . . . . Methods of making reels, bobbins, cop tubes, or the like by working an unspecified material, or several materials
Methods, apparatus, or devices of general interest or not otherwise provided for in connection with the handling of...

81/00 Methods, apparatus, or devices for covering or wrapping cores by winding webs, tapes, or filamentary material, not otherwise provided for (forming hollow objects by winding filamentary material on to fusible or soluble cores [B29C 53/56]; wrapping for the purpose of packaging [B65B 11/00]; making wound articles of paper [B31C])

81/02 Covering or wrapping annular or like cores forming a closed or substantially closed figure

81/04 by feeding material obliquely to the axis of the core

81/06 Covering or wrapping elongated cores

81/08 by feeding material obliquely to the axis of the core

83/00 Combinations of piling and depiling operations, e.g. performed simultaneously, of interest apart from the single operation of piling or depiling as such

83/02 performed on the same pile or stack

83/025 onto and from the same side of the pile or stack

85/00 Recirculating articles, i.e. feeding each article to, and delivering it from, the same machine workstation more than once

99/00 Subject matter not provided for in other groups of this subclass

2220/00 Function indicators

2220/01 indicating an entity as a function of which control, adjustment or change is performed, i.e. input

2220/02 indicating an entity which is controlled, adjusted or changed by a control process, i.e. output

2220/03 indicating an entity which is measured, estimated, evaluated, calculated or determined but which does not constitute an entity which is adjusted or changed by the control process per se

2220/04 for distinguishing adjusting from controlling, i.e. manual adjustments

2220/08 for distinguishing changing an entity in function of another entity purely by mechanical means, i.e. no electronics involved

2220/09 indicating that several of an entity are present

2220/11 indicating that the input or output entities exclusively relate to machine elements

2301/00 Handling processes for sheets or webs

2301/10 Selective handling processes

2301/11 of web or zig-zag web

2301/12 of sheets or web

2301/121 for sheet handling processes, i.e. wherein the web is cut into sheets

2301/122 for web or sheet handling processes wherein the sheets are cut from the web

2301/13 Relative to size or orientation of the material

2301/131 single width or double width

2301/132 single face or double face

2301/1321 Printed material

2301/133 Face-up or face-down handling mode

2301/134 Portrait or landscape printing

2301/134 of batches of material of different characteristics

2301/141 of different format, e.g. A0 - A4

2301/142 of different thickness

2301/1421 Single sheet or set of sheets

2301/1422 Sheet or envelope

2301/15 of sheets in pile or in shingled formation

2301/151 Selective shingled formation

2301/1511 Selective shingled or non shingled formation

2301/152 of sheets piled horizontally or vertically

2301/156 of discharge in bins, stacking, collating or gathering

2301/161 Mailing or sorting mode

2301/162 Normal or offset stacking mode

2301/163 Bound or non bound, e.g. stapled or non stapled stacking mode

2301/1635 selective stapling modes, e.g. corner or edge or central

2301/164 Folded or non folded stacking mode

2301/165 Normal or finished stacking mode

2301/166 Superposed or interfolded stacking mode

2301/17 Selective folding mode

2301/20 Continuous handling processes

2301/21 of batches of material of different characteristics

2301/211 of different format, e.g. A0 - A4

2301/212 of different thickness

2301/22 of material of different characteristics

2301/23 of multiple materials in parallel to each other

2301/231 Recto verso portions of a single material

2301/30 Orientation, displacement, position of the handled material

2301/31 Features of transport path

2301/311 for transport path in plane of handled material, e.g. geometry

2301/3111 circular

2301/3112 S-shaped

2301/31122 Omega-shaped

2301/31124 U-shaped

2301/3113 vertical

2301/3114 oblique with respect to axis of handled material

2301/3115 linear

2301/312 for transport path involving at least two planes of transport forming an angle between each other

2301/3121 L-shaped

2301/3122 U-shaped

2301/3123 S-shaped

2301/3124 Y-shaped

2301/3125 T-shaped

2301/314 Closed loop

2301/316 of web roll

2301/3162 involving only one plane containing the roll axis

2301/31622 rectilinear transport path

2301/3164 involving at least two planes containing the roll axis

2301/31642 L-shaped

2301/316422 Orientation of handled material
Spacing displacement Modifying, selecting, changing direction of stationary material parallel to the direction of displacement with change of plane of displacement without change of plane of displacement Inverting

Lateral positioning oscillating material transversely relatively to a given axis of displacement by travelling an angled curved path section by travelling a path section in arc of circle planes after at least two changes of direction for changing level of plane of displacement, i.e. the material being transported in parallel planes after at least two changes of direction by travelling a path section in arc of circle by travelling an angled curved path section for overturning and changing feeding direction

reciprocating supporting means vertically moving supporting means moving along a path enclosing a circular area, e.g. turret moving on path enclosing a non-circular area moving on an arc of a circle, i.e. pivoting supporting means Mounting arrangements not otherwise provided for sequentially used roll supports for the same web roll one of the supports for the roller axis being movable as auxiliary bearing the roller axis pivoting around an axis perpendicular to itself

2301/3621 . . . . perpendicularly to a first direction in which the material is already in registered position
2301/3622 . . . . centering, positioning material symmetrically relatively to said first direction
2301/363 . . . . of material in pile
2301/364 . . . . of material in roll
2301/40 . . . . Type of handling process
2301/41 . . . . Winding, unwinding
2301/412 . . . . Roll
2301/4124 . . . . Outer end attachment
2301/41242 . . . . Tab arrangement
2301/41244 . . . . glued between outmost layer and tail
2301/41246 . . . . by machine, e.g. on unwinder turret
2301/4127 . . . . with interleaf layer, e.g. liner
2301/4128 . . . . Multiple rolls
2301/41282 . . . . coaxially arranged
2301/41284 . . . . involving juxtaposed lanes wound around a common axis
2301/412845 . . . . and spliced to each other, e.g. for serial unwinding
2301/413 . . . . Supporting web roll
2301/41306 . . . . Slot arrangement, e.g. saddle shaft bearing
2301/41308 . . . . Releasably clamping the web roll shaft
2301/4131 . . . . Support with vertical axis
2301/41312 . . . . the axis being displaced on circular path of 360 degrees
2301/4132 . . . . Cantilever arrangement
2301/41322 . . . . pivoting movement of roll support
2301/413223 . . . . around an axis parallel to roll axis
2301/413226 . . . . around an axis perpendicular to roll axis
2301/41324 . . . . linear movement of roll support
2301/413243 . . . . parallel to roll axis
2301/413246 . . . . perpendicular to roll axis (e.g. lowering)
2301/4133 . . . . special features
2301/41335 . . . . locking mechanism for roll, e.g. axial flange
2301/4134 . . . . Both ends type arrangement
2301/41342 . . . . shaft transversing the roll (see also B65H 75/08)
2301/41344 . . . . the roll being fixed to the shaft (e.g. by clamping)
2301/41346 . . . . separate elements engaging each end of the roll (e.g. chuck)
2301/4135 . . . . Movable supporting means
2301/41352 . . . . moving on linear path (including linear slot arrangement)
2301/413523 . . . . reciprocating supporting means
2301/413526 . . . . vertically moving supporting means
2301/41354 . . . . moving along a path enclosing a circular area, e.g. turret
2301/41356 . . . . moving on path enclosing a non-circular area
2301/41358 . . . . moving on an arc of a circle, i.e. pivoting supporting means
2301/4136 . . . . Mounting arrangements not otherwise provided for
2301/41361 . . . . sequentially used roll supports for the same web roll
2301/41362 . . . . one of the supports for the roller axis being movable as auxiliary bearing
2301/41364 . . . . the roller axis pivoting around an axis perpendicular to itself
Winding

Performing winding process

Starting winding process

Preparing winding process

Supporting means for several rolls

moving in forced (kinematic) relationship

moving independently from each other

juxtaposed

belt arrangement

arranged in stationary manner

arranged in non-stationary manner, i.e. changing according to actual roll diameter

fixed or flexible frictional surface

on inclined surface

Supporting means for several rolls

moving in forced (kinematic) relationship

moving independently from each other

juxtaposed

Preparing winding process

Cutting leading strip for transferring web

Starting winding process

involving electrostatic means

involving mechanical means

Fixed to frame, tucking leading edge to core, e.g. by brush

Fixed to shaft or mandrel, e.g. clamping or pinching leading edge to shaft or mandrel

rotatable grippers for coreless winding

involving liquid, e.g. wetting core by water

involving use of glue

involving blowing means, e.g. air blast

involving suction means, e.g. core with vacuum supply

involving arrangements for securing leading edge to core, e.g. adhesive tape

involving additional element between core and web

in coreless applications

Performing winding process

Special features of winding process

Helical winding (B65H 2701/18444 takes precedence)

Oscillating winding, i.e. oscillating the axis of the winding roller or material

Spiral winding, i.e. single layers not touching each other, e.g. for tyre rubber

involving leaflet web/sheet, e.g. liner

winding a core in-line with the web, e.g. wound core made out of sheet material

winding on core with non-circular cross-sectional profile, e.g. polygonal, oval, flat or slightly curved

winding on core irregular inner or outer longitudinal profile, e.g. stepped or grooved

different torques on both ends of core

blowing gas into winding gap

Finishing winding process

and blocking outer layers against falling apart

Specified by the sealing medium sealing used

Glue or hot-melt

Adhesive tape

Electrostatic charge

Simultaneous deformation of trailing edge and outer layers

Heating or use of thermoplastic material

Folding of trailing end

Specified by the place to where the sealing medium is applied

onto the roll

onto the web

Specified by process phase during which sealing/securing is performed

Sealing or securing within the winding station

Sealing or securing in a separate following station

after winding process

removing roll/core from shaft/mandrel, e.g. by compressed air

Discharging roll by, e.g. rolling it down a slope

involving particular drive arrangement

centre drive

nip drive

lateral drive arrangement, e.g. operating on the flange of the web roll

combinations of drives

centre and nip drive

slitting

prepare slitting process

slitting roll after winding, i.e. cutting log

winding on one single shaft or support

winding on two or more winding shafts simultaneously

directly against central support roller

on bed rollers

trimming edge

features concerning supply of cores

integrated core cutter

loading pre-arranged set of cores

Unwinding

Special features of unwinding process

Roll holder being able to pivot around an axis perpendicular to roller axis
Unwinding or winding material from or to one roll or core

2301/415016 . . . . . Roll material fed from inner layer
2301/41505 . . . . . Preparing unwinding process
2301/41506 . . . . . the web roll not yet being in the unwinding support / unwinding location
2301/415063 . . . . . the preparation performed in a roll preparation station
2301/415066 . . . . . by connecting trailing edge of expiring web to leading edge of following web
2301/41508 . . . . . the web roll being in the unwinding support / unwinding location
2301/415085 . . . . . by adjusting / registering the lateral position of the web roll
2301/41509 . . . . . opening web roll and related steps
2301/415095 . . . . . gripping an edge of the web, e.g. by clamping and forward it, e.g. to splicing web advancing unit
2301/4151 . . . . . Starting unwinding process
2301/41518 . . . . . Performing unwinding process
2301/415185 . . . . . Web unwound being guided over (pivoting) guide resting on the roller diameter
2301/4152 . . . . . . Finishing unwinding process
2301/41522 . . . . . . Detecting residual amount of web
2301/41524 . . . . . . Detecting trailing edge
2301/41525 . . . . . . and consuming web roll up to trailing edge
2301/4155 . . . . . . . after unwinding process
2301/41552 . . . . . . . separating core from remaining layers of wound material from each other
2301/415525 . . . . . . . by cutting wound material, e.g. transversally (core slabling)
2301/4156 . . . . . . . Unwinding or winding material from or to one station in which the material is stored
2301/417 . . . . . . . Handling or changing web rolls
2301/41702 . . . . . . . management and organisation of stock and production
2301/41704 . . . . . . . involving layout of production or storage facility
2301/4171 . . . . . . . Handling web roll
2301/4172 . . . . . . . by circumferential portion, e.g. rolling on circumference
2301/41722 . . . . . . . by acting on outer surface, e.g. gripping or clamping
2301/41724 . . . . . . . by crane
2301/41726 . . . . . . . by conveyor
2301/4173 . . . . . . . by central portion, e.g. gripping central portion
2301/41732 . . . . . . . by crane
2301/41734 . . . . . . . involving rail
2301/4174 . . . . . . . by side portion, e.g. forwarding roll lying on side portion
2301/41745 . . . . . . . by axial movement of roll
2301/4175 . . . . . . . involving cart (see B65H 2405/422)
2301/4176 . . . . . . . Preparing leading edge of replacement roll
2301/41764 . . . . . . . by adhesive tab
2301/41766 . . . . . . . by adhesive tab or tape with cleavable or delaminating layer
2301/418 . . . . . . . Changing web roll
2301/4181 . . . . . . . Core or mandrel supply
2301/41812 . . . . . . . by conveyor belt or chain running in closed loop
2301/41814 . . . . . . . by container storing cores and feeding through wedge-shaped slot or elongated channel

B65H

2301/41816 . . . . . by core magazine within winding machine, i.e. horizontal or inclined ramp holding cores
2301/41818 . . . . . mandrels circulating (cycling) in machine or system
2301/4182 . . . . . Core or mandrel insertion, e.g. means for loading core or mandrel in winding position
2301/41822 . . . . . from above, i.e. by gravity
2301/41824 . . . . . from below, e.g. between rollers of winding bed
2301/41826 . . . . . by gripping or pushing means, mechanical or suction gripper
2301/41828 . . . . . in axial direction
2301/41829 . . . . . positioning the core, e.g. in axial direction
2301/4185 . . . . . Core or mandrel discharge or removal, also organisation of core removal
2301/41852 . . . . . by extracting mandrel from wound roll, e.g. in coreless applications
2301/418523 . . . . . by movement of the wound web roll
2301/418526 . . . . . by movement of the mandrel
2301/41854 . . . . . by extracting core from wound roll, i.e. in coreless applications only
2301/41856 . . . . . by stripping core from mandrel or chuck, e.g. by spring mechanism
2301/41858 . . . . . by collecting cores in container
2301/41859 . . . . . by continuously operated device, e.g. conveyor
2301/4186 . . . . . by lifting or lowering device, e.g. crane
2301/4187 . . . . . Relative movement of core or web roll in respect of mandrel
2301/4189 . . . . . Cutting
2301/41891 . . . . . Cutting knife located between two winding rollers
2301/41892 . . . . . Cutting knife located in winding or guiding roller and protruding therefrom
2301/418925 . . . . . and cooperating with second assembly located in another roller
2301/41893 . . . . . Cutting knife moving on circular path
2301/41894 . . . . . Cutting knife moving on circular or acuate path, e.g. pivoting around winding roller
2301/41896 . . . . . Several cutting devices, e.g. located at different upstream/downstream positions of the web path
2301/41898 . . . . . Cutting threading tail and leading it to new core
2301/419 . . . . . from or to storage, i.e. the storage integrating winding or unwinding means
2301/4191 . . . . . for handling articles of limited length, e.g. in AO format, arranged at intervals from each other
2301/41912 . . . . . between two belt like members
2301/4192 . . . . . for handling articles of limited length in shingled formation
2301/41922 . . . . . and wound together with single belt like members
2301/419225 . . . . . Several belts spaced in axis direction
2301/41924 . . . . . between two belt like members
2301/4193 . . . . . for handling continuous material
2301/42 . . . . . Piling, depiling, handling piles
2301/421 . . . . . Forming a pile
2301/4211 . . . . . of articles alternatively overturned, or swivelled from a certain angle
Delivering, advancing piles in or on special supports
by introducing articles from the under the pile
by introducing articles selectively from under or above the pile
of a limited number of articles, e.g. buffering, forming bundles
between belts
Feeder loader, i.e. picking up articles from a main stack for maintaining continuously enough articles in a machine feeder
of articles on edge
by introducing articles from beneath
by erecting articles from horizontal transport flushing with the supporting surface of the pile
by introducing articles from above
of articles riding on an elongated member
of web folded in zig-zag form
Juxtaposing several piles
Guiding web alternatively to corner of pile receiver
by stationary guide element
Forming multiple piles
simultaneously
Changing the pile
forming a pile in which articles are offset from each other, e.g. forming stepped pile
forming a pile of articles in zigzag fashion
forming a pile in which articles are offset from each other in the delivery direction
Extracting staple from stapled set of articles
Squaring-up piles
Pressing piles
Gripping piles, sets or stacks of articles
by acting on the outermost articles of the pile for clamping the pile
Sets in which articles are offset to each other
in or on special supports
Vehicles, e.g. carriage, truck
Boxes; Cassettes; Containers
emptying or unloading processes
opening processes
superposed
filling or loading process
Pallets; Skids; Platforms with feet, i.e. handled together with the stack
Delivering, advancing piles
by dropping
from opposite part-support elements, e.g. operated simultaneously
by acting on surface of outermost articles of the pile, e.g. in nip between pair of belts or rollers (Nota: gripping pile see B65H 2301/4224)
by moving the surface supporting the lowermost article of the pile, e.g. conveyor, carriage
by moving the surface supporting the pile of articles on edge, e.g. conveyor or carriage
by acting on edge of the pile for moving it along a surface, e.g. pushing
by acting on one of the outermost article for moving pile of articles on edge along a surface, e.g. pushing
Deforming piles, e.g. folding
Dividing piles
cutting piles
Depiling; Separating articles from a pile
by two or more separators acting selectively on the same pile
of horizontal or inclined articles, i.e. wherein articles support fully or in part the mass of other articles in the piles
from bottom of the pile
by dropping the article through an opening beneath the pile
from top of the pile
the pile lying on a stationary support, i.e. the separator moving according to the decreasing height of the pile
selectively from bottom or top of the pile
of inclined articles and inclination angle >45
by peeling, i.e. involving elongated elements traversing pile
assisting separation or preventing double feed
vibrating
separating stack from the sheet separating means after separation step
Releasing stack holding means during separation step
of web material in zig-zag form
of vertical articles, e.g. by extracting articles laterally from the pile
by extracting articles upwards from the pile
in sorter
Forming batches
by inserting a wire or tape shaped marker element
cut into tabs before or upon insertion
by inserting auxiliary support as defined in B65H 31/32
and using auxiliary means for facilitating introduction of the auxiliary support
Feeding end plate or end sheet before formation or after completion of a pile
feeding batch receiving board or sheet into the pile for receiving next batch
Gathering; Associating; Assembling
Features with regard to the collection, nature, sequence and/or the making thereof
Making personalised books or mail packets according to personal, geographic or demographic data
Gathering material delivered from a digital printing machine
Making samples assemblies
Finishing misfeed, multiplefeed on saddles on collecting conveyor substantially vertical or inclined in trays, i.e. horizontally in pockets, i.e. vertically bringing a cover parallel to the saddles on a rotary carrier rotating around an axis with supports for receiving combination of with pins engaging into handled material with grippers substantially horizontal in each compartment substantially horizontal receiving articles astride thereon channels essentially horizontal substantially horizontal in pockets, i.e. horizontally substantially horizontal substantially horizontal substantially horizontal substantially vertical or inclined and opening face laterally to its transport direction substantially vertical or inclined and opening face rearwards to its transport direction the subproduct being inserted in a direction substantially perpendicular to the fold of the main product the main product being slightly inclined or horizontal and oriented with opening face laterally to its transport direction the subproduct being inserted in a direction parallel to the fold of the main product the main product being oriented with opening face upwards the subproduct being inserted in a direction parallel to the fold of the main product attaching subproducts on outer portion of a main product gathering, associating, assembling articles from a single source which is supplied by several sources in pockets, i.e. vertically and dropping material through bottom of the pocket asymmetric pockets in trays, i.e. horizontally in channels, e.g. in which the articles are substantially vertical or inclined with several channels on a rotary carrier rotating around an axis parallel to the channels on collecting conveyor receiving articles astride thereon with pushers, e.g. the articles being substantially horizontal with compartments, e.g. the articles being substantially horizontal in each compartment with grippers with pins engaging into handled material with supports for receiving combination of articles astride and in standing position on saddles on a rotary carrier rotating around an axis parallel to the saddles repairing a faulty collection due to, e.g. misfeed, multiplefeed finishing bringing a cover binding or attaching processes involving binding tape involving heating involving pressure sensitive adhesive involving wrapping, banding or strapping making packets of bundles of banknotes or the like in correct sequence webs and ribbons, tapes or strips and threads sheet-like articles and threads signatures, i.e. involving folded main product or jacket inserting subproducts in a signature as main product the subproduct being inserted in a direction substantially perpendicular to the fold of the main product the main product being slightly inclined or horizontal and oriented with opening face laterally to its transport direction the main product being oriented with opening face upwards the subproduct being inserted in a direction parallel to the fold of the main product attaching subproducts on outer portion of a main product gathering, associating, assembling articles from a single source which is supplied by several sources in pockets, i.e. vertically and dropping material through bottom of the pocket asymmetric pockets in trays, i.e. horizontally in channels, e.g. in which the articles are substantially vertical or inclined with several channels on a rotary carrier rotating around an axis parallel to the channels on collecting conveyor receiving articles astride thereon with pushers, e.g. the articles being substantially horizontal with compartments, e.g. the articles being substantially horizontal in each compartment with grippers with pins engaging into handled material with supports for receiving combination of articles astride and in standing position on saddles on a rotary carrier rotating around an axis parallel to the saddles repairing a faulty collection due to, e.g. misfeed, multiplefeed finishing bringing a cover binding or attaching processes involving binding tape involving heating involving pressure sensitive adhesive involving wrapping, banding or strapping making packets of bundles of banknotes or the like in correct sequence webs and ribbons, tapes or strips and threads sheet-like articles and threads signatures, i.e. involving folded main product or jacket inserting subproducts in a signature as main product the subproduct being inserted in a direction substantially perpendicular to the fold of the main product the main product being slightly inclined or horizontal and oriented with opening face laterally to its transport direction the main product being oriented with opening face upwards the subproduct being inserted in a direction parallel to the fold of the main product attaching subproducts on outer portion of a main product gathering, associating, assembling articles from a single source which is supplied by several sources in pockets, i.e. vertically and dropping material through bottom of the pocket asymmetric pockets in trays, i.e. horizontally in channels, e.g. in which the articles are substantially vertical or inclined with several channels on a rotary carrier rotating around an axis parallel to the channels on collecting conveyor receiving articles astride thereon with pushers, e.g. the articles being substantially horizontal with compartments, e.g. the articles being substantially horizontal in each compartment with grippers with pins engaging into handled material with supports for receiving combination of articles astride and in standing position on saddles on a rotary carrier rotating around an axis parallel to the saddles repairing a faulty collection due to, e.g. misfeed, multiplefeed finishing bringing a cover binding or attaching processes involving binding tape involving heating involving pressure sensitive adhesive involving wrapping, banding or strapping B65H
2301/4454 . . . Merging two or more streams
2301/4455 . . . Diverting a main stream into part streams
2301/44552 . . . by alternatively directing articles following each other to appropriate part stream
2301/446 . . . Assisting moving, forwarding or guiding of material
2301/4461 . . . by blowing air towards handled material
2301/4462 . . . by jogging
2301/447 . . . transferring material between transport devices

**NOTE**
When classifying in this group, the notation + B65H 2220/01 designates downstream transport device, while the notation + B65H 2220/02 designates the upstream transport device

2301/4471 . . . Grippers, e.g. moved in paths enclosing an area
2301/44712 . . . carried by chains or bands
2301/44714 . . . carried by rotating members
2301/44716 . . . reciprocated in arcuate paths
2301/44718 . . . reciprocated in rectilinear paths
2301/4472 . . . Suction grippers, e.g. moved in paths enclosing an area
2301/44722 . . . oscillated in arcuate paths
2301/44724 . . . reciprocated in rectilinear paths
2301/4473 . . . Belts, endless moving elements on which the material is in surface contact
2301/44732 . . . transporting articles in overlapping stream
2301/44734 . . . overhead, i.e. hanging material by attraction forces, e.g. suction, magnetic forces
2301/44735 . . . suction belt
2301/4474 . . . Pair of cooperating moving elements as rollers, belts forming nip into which material is transported
2301/4475 . . . Rotary or endless transport devices having elements acting on edge of articles
2301/4476 . . . Endless transport devices with compartments
2301/44765 . . . Rotary transport devices with compartments
2301/4477 . . . Transport device with transport surface in sliding contact with handled material
2301/4478 . . . Transport device acting on edge of material
2301/4479 . . . Saddle conveyor with saddle member extending in transport direction
2301/44795 . . . Saddle conveyor with saddle member extending transversally to transport direction
2301/448 . . . Diverting
2301/4481 . . . Stripping material from carrier web
2301/4482 . . . to multiple paths, i.e. more than 2
2301/44822 . . . 3 paths
2301/449 . . . Features of movement or transforming movement of handled material
2301/4491 . . . transforming movement from continuous to intermittent or vice versa
2301/4492 . . . braking
2301/44921 . . . by friction contact with non driven element
2301/4493 . . . intermittent
2301/45 . . . Folding, unfolding
2301/4505 . . . Folding bound sheets, e.g. stapled sheets
2301/451 . . . involving manual operations
2301/452 . . . utilising rotary folding means
2301/4521 . . . without tucker blades
2301/453 . . . opening folded material
2301/4531 . . . by opposite opening drums
2301/45312 . . . adjusting stop relative to one of the drums, i.e. in function of format
2301/4532 . . . by movable member crossing the path of the folded material, i.e. traversing along product lip
2301/45322 . . . Helical member
2301/4533 . . . by stationary member in the transport path of the folded material, i.e. the fold being parallel to the direction of transport
2301/46 . . . Splicing
2301/4601 . . . special splicing features or applications
2301/46011 . . . in winding process
2301/46013 . . . and maintaining register of spliced webs
2301/46014 . . . of webs with labels
2301/46015 . . . of (half) tube webs
2301/46016 . . . replacing lap slice by butt splice
2301/46017 . . . involving several layers
2301/46018 . . . involving location or further processing of splice
2301/460183 . . . marking of splice
2301/460186 . . . detect location of splice
2301/4602 . . . Preparing splicing process
2301/46022 . . . by detecting mark on rotating new roll and/or synchronize roll with trailing web speed
2301/46024 . . . by collecting a loop of material of the fresh web downstream of the splicing station
2301/4604 . . . Opening web rolls, remove outer layers
2301/46042 . . . by tearing, bursting etc. preferably only outer (protective) layer
2301/46043 . . . by cutting or tearing only outermost layer
2301/46044 . . . by cutting or perforating in transverse direction
2301/4606 . . . Preparing leading edge for splicing
2301/46064 . . . by transversally operated carriage
2301/46066 . . . by inserting adhesive tape between leading edge and wound roll
2301/4607 . . . by adhesive tape
2301/46072 . . . inserted between leading edge and wound web roll
2301/46075 . . . by adhesive tab
2301/46078 . . . the adhesive tab or tab having a cleavable or delaminating layer
2301/461 . . . Processing webs in splicing process
2301/4611 . . . before splicing
2301/46115 . . . by bringing leading edge to splicing station, e.g. by chain or belt
2301/4613 . . . during splicing
2301/46132 . . . consuming web up to trailing edge
2301/4615 . . . after splicing
2301/46152 . . . cutting off tail after (flying) splicing
2301/46154 . . . guiding tail after (flying) splicing
2301/4617 . . . cutting webs in splicing process
2301/46171 . . . cutting leading edge of new web, e.g. manually
2301/46172 . . . cutting expiring web only
2301/46174 . . . cutting both spliced webs separately
2301/46176 . . . cutting both spliced webs simultaneously
2301/46178 . . . cutting by transversally moving element
Forming a tube
Corrugating; Stiffening
Compressing, i.e. diminishing thickness
for flattening
Stretching; Tentering
Stretching transversely; Tentering
involving roller pair acting on edge of web
involving guiding web along the circumference of a ring section
involving members moving axially on periphery of a drum
Restoring form
Compensating stretching
Unshirring
Removing waviness or curl, smoothing
involving tri-roller arrangement
Embossing, crimping or similar processes
shredding
Modifying electric properties
Magnetising
Bringing electrostatic charge
Removing electrostatic charge
Modifying physical properties
Rendering inert
Moistening
by passing through a bath
Warming
Applying heat and pressure
Cooling
Cutting handled material
transversally to feeding direction
using a cutting member moving linearly in a plane parallel to the surface of the web and along a direction crossing the handled material
arranged for cutting web supported on the surface of a cylinder
for cutting from inside of the cylinder
Breaking; Bursting; Tearing, i.e. cutting without cutting member
Cutting partially, e.g. perforating
Details of cutting means
involving forms of stored energy, e.g. compressed air or explosive
Blade cutter, e.g. single blade cutter
rotary
Multiple blade cutter
Air jet
Water jet
adhesive tape or tab
Laser
Vacuum means
Die-cutting
Wire
from hand-held or table dispenser
with means mounted on roll of material
longitudinally
shredding
Securing handled material to another material
Binding processes
2301/5161 . . . . involving at least a binding element traversing the handled material, e.g. staple
2301/5162 . . . . involving ultrasonic waves
2301/5164 . . . . involving heating element
2301/5166 . . . . involving simultaneous deformation of parts of the material to be bound
2301/5162 . . . . Coating, applying liquid or layer of any material to material
2301/5163 . . . . Applying label, tab to handled material
2301/517 . . . . Drying material
2301/52 . . . . for starting
2301/521 . . . . Stripping web from roll
2301/522 . . . . Threading web into machine
2301/52202 . . . . around several subsequent rollers (e.g. calendar)
2301/53 . . . . for acting on performance of handling machine
2301/5305 . . . . Cooling parts or areas of handling machine
2301/531 . . . . Cleaning parts of handling machine
2301/532 . . . . Modifying characteristics of surface of parts in contact with handled material
2301/5321 . . . . Removing electrostatic charge generated at said surface
2301/5322 . . . . Generating electrostatic charge at said surface
2301/5323 . . . . bringing adhesive properties
2301/533 . . . . Self-repair; Self-recovery; Automatic correction of errors
2301/54 . . . . for managing processing of handled material
2301/541 . . . . Counting
2301/542 . . . . Quality control
2301/5421 . . . . taking samples
2301/543 . . . . processing waste material
2301/544 . . . . Reading; Scanning

2401/00 Materials used in construction, properties thereof

2401/10 . . . . Materials
2401/11 . . . . Macromolecular composition
2401/111 . . . . Elastomer
2401/112 . . . . Fiber reinforced composition
2401/1121 . . . . Carbon fibre composition
2401/113 . . . . Polymer composition
2401/114 . . . . Polyester composition
2401/1141 . . . . Flexible polyester film made from biaxially oriented polyethylene terephthalate
2401/115 . . . . Resin composition
2401/12 . . . . Ceramic composition
2401/13 . . . . Coatings, paint, varnish and details thereof
2401/14 . . . . textile materials
2401/141 . . . . woven or knit material
2401/15 . . . . Metals
2401/20 . . . . Physical properties
2401/21 . . . . electrical properties
2401/211 . . . . Conductivity
2401/212 . . . . electrical resistance
2401/213 . . . . magnetic properties
2401/22 . . . . visual aspect properties
2401/221 . . . . opaque material
2401/222 . . . . transparent material
2401/23 . . . . Strength of materials
2401/231 . . . . Rigidity
2401/2311 . . . . tensile elastic, Young's modulus
2401/24 . . . . Other properties

2401/241 . . . . Self lubricating
2401/242 . . . . porous
2401/243 . . . . heat-shrinkable
2401/244 . . . . non-permeable

2402/00 Features of construction

2402/10 . . . . Modular construction
2402/11 . . . . using preforms, e.g. profiles
2402/20 . . . . Force system
2402/21 . . . . Concurrent force system
2402/22 . . . . Parallel force system
2402/23 . . . . Composition of forces
2402/231 . . . . Parallelogram of forces
2402/232 . . . . Resolution of a force
2402/24 . . . . Means for balancing forces
2402/25 . . . . Centrifugal force
2402/30 . . . . Support, subassembly, mounting thereof
2402/31 . . . . Pivoting support means
2402/32 . . . . Sliding support means
2402/33 . . . . cantilever support means
2402/34 . . . . other support assembly
2402/341 . . . . Eccentric mounting
2402/342 . . . . Parallelogram mounting
2402/343 . . . . Telescopic mounting
2402/344 . . . . scissor-like assembly
2402/35 . . . . rotating around an axis
2402/351 . . . . Turntable
2402/352 . . . . turret
2402/40 . . . . Features of frame, housing or mounting of the handling apparatus
2402/41 . . . . Portable or hand-held apparatus
2402/411 . . . . with means for mounting the apparatus on the user body, e.g. arm, wrist
2402/412 . . . . details or the parts to be hold by the user, e.g. handle
2402/413 . . . . with means for mounting the apparatus to clothing of a user
2402/414 . . . . Manual tools for filamentary material, e.g. for mounting or removing a bobbin, measuring tension or splicing
2402/42 . . . . Mobile apparatus, i.e. mounted on mobile carrier such as tractor or truck
2402/43 . . . . Wall apparatus, i.e. mounted on vertical support
2402/44 . . . . Housing
2402/441 . . . . movable for facilitating access to area inside the housing, e.g. pivoting, sliding
2402/442 . . . . with opening for introducing material to be handled, e.g. to insert wound roll of product
2402/443 . . . . with opening for delivering material, e.g. to pull out web (dispensing)
2402/45 . . . . door (s)
2402/46 . . . . table apparatus
2402/50 . . . . Machine elements
2402/51 . . . . Joints
2402/511 . . . . riveted joints
2402/512 . . . . Key and spline joints
2402/5121 . . . . Key joint
2402/5122 . . . . Spline joint
2402/513 . . . . Welded joints
2402/514 . . . . threaded joints
2402/515 . . . . Quick release
2402/5151 . . . . involving pawl and ratchet rack
2402/5152 . . . . Snap
Power transmission; Driving means

2403/00 . . . Power transmission; Driving means

2403/10 . . . Friction gearings
2403/11 . . . Variable-speed drive unit
2403/111 . . . frontonal
2403/20 . . . Belt drives
2403/21 . . . Timing belts
2403/211 . . . Double-sided timing belts
2403/22 . . . planetary
2403/25 . . . Arrangement for tensioning
2403/30 . . . Chain drives
2403/31 . . . involving non endless chain, e.g. the chain being used as a flexible rack

2403/40 . . . Toothed gearings
2403/41 . . . Rack-and-pinion, cogwheel in cog railway
2403/411 . . . Double rack cooperating with one pinion, e.g. for performing symmetrical displacement relative to pinion
2403/412 . . . Flexible rack
2403/42 . . . Spur gearing
2403/421 . . . involving at least a gear with toothless portion
2403/422 . . . involving at least a swing gear
2403/43 . . . Bevel gearing
2403/44 . . . Internal gearing
2403/45 . . . helical gearing
2403/46 . . . worm gearing
2403/47 . . . Ratchet
2403/48 . . . Other
2403/481 . . . Planetary
2403/482 . . . Harmonic drive
2403/483 . . . Differential gearing
2403/484 . . . Speed reducers
2403/50 . . . Driving mechanisms
2403/51 . . . Cam mechanisms
2403/511 . . . involving cylindrical cam, i.e. cylinder with helical groove at its periphery
2403/512 . . . involving radial plate cam
2403/513 . . . involving elongated cam, i.e. parallel to linear transport path
2403/514 . . . involving eccentric
2403/52 . . . Translation screw-thread mechanisms
2403/53 . . . Articulated mechanisms
2403/531 . . . Planar mechanisms
2403/5311 . . . Parallellogram mechanisms
2403/532 . . . Crank-and-rocker mechanism
2403/5321 . . . with oscillating crank, i.e. angular movement of crank inferior to 360
2403/533 . . . Slotted link mechanism
2403/5331 . . . with sliding slotted link
2403/5332 . . . with rotating slotted link
2403/5333 . . . with oscillating slotted link
2403/54 . . . other
2403/541 . . . Trigger mechanisms
2403/542 . . . Geneva mechanisms
2403/543 . . . producing cycloids
2403/544 . . . involving rolling up - unrolling of transmission element, e.g. winch
2403/5441 . . . with steel band as tracting element
2403/55 . . . Tandem; twin or multiple mechanisms, i.e. performing the same operation
2403/60 . . . Damping means, shock absorbers
2403/61 . . . Rotation damper
2403/70 . . . Clutches; Couplings
2403/72 . . . Clutches, brakes, e.g. one-way clutch +F204
2403/721 . . . Positive-contact clutches, jaw clutches
2403/722 . . . Gear clutches
2403/723 . . . Wrap spring clutches
2403/724 . . . electromagnetic clutches
2403/7241 . . . eddy current clutches
2403/725 . . . Brakes
2403/7251 . . . Block brakes
2403/7252 . . . fluid controlled
2403/7253 . . . pneumatically controlled
2403/7254 . . . Dynamo electric brakes
2403/7255 . . . Disc brakes
B65H

2404/00 Parts for transporting or guiding the handled material

2404/10 . . . Rollers

2404/11 . . . Details of cross-section or profile

2404/111 . . . shape

2404/1112 . . . D-shape

2404/1113 . . . C-shape

2404/1114 . . . Paddle wheel

2404/1115 . . . toothed roller

2404/1116 . . . Polygonal cross-section

2404/1118 . . . with at least a relief portion on the periphery

2404/1119 . . . with at least an axial cavity on the periphery

2404/112 . . . Means for varying cross-section

2404/1121 . . . for changing diameter

2404/11211 . . . by inflation

2404/1122 . . . for rendering elastically deformable

2404/11221 . . . involving spring

2404/1113 . . . made of circular segments

2404/1114 . . . Built-up elements

2404/11141 . . . covering a part of the periphery

2404/1115 . . . other

2404/1151 . . . brush

2404/1152 . . . Markings, patterns

2404/117 . . . comprising hollow portions

2404/12 . . . with at least an active member on periphery

2404/121 . . . articulated around axis parallel to roller axis

2404/122 . . . rotated around an axis parallel to the roller axis

2404/123 . . . moving in parallel to roller axis

2404/1231 . . . Arrangement of axially movable active elements, i.e. movable in parallel to roller axis

(B65H 2404/54 takes precedence)

2404/13 . . . Details of longitudinal profile

2404/131 . . . shape

2404/1311 . . . Undulations, wavy shape

2404/1312 . . . tapered shape

2404/1313 . . . concave

2404/1314 . . . convex

2404/1315 . . . conical

2404/1316 . . . stepped or grooved

2404/13161 . . . Regularly spaced grooves

2404/13162 . . . Helicoidal grooves

2404/13163 . . . in longitudinal direction

2404/1317 . . . End profile

2404/13171 . . . tapered

2404/132 . . . arrangement of segments along axis

2404/1321 . . . Segments juxtaposed along axis

2404/13211 . . . and interconnected by gearing, e.g. differential gearing

2404/13212 . . . and driven independently

2404/133 . . . Limited number of active elements on common axis

2404/134 . . . Axle

2404/1341 . . . Elastic mounting, i.e. subject to biasing means

2404/1342 . . . Built-up, i.e. arrangement for mounting axle element on roller body

2404/13421 . . . involving two elements, i.e. an element at each end of roller body

2404/1343 . . . axially limiting roller

2404/1344 . . . with eccentric shaft

2404/1345 . . . with two or more degrees of freedom

2404/1346 . . . balancing roller

2404/1347 . . . curved

2404/135 . . . Body

2404/1351 . . . Pipe element

2404/136 . . . with canals

2404/1361 . . . with cooling/heating system

2404/1362 . . . vacuum

2404/1363 . . . air supply or suction

2404/1364 . . . liquid

2404/137 . . . Means for varying longitudinal profiles

2404/1371 . . . Means for bending, e.g. for controlled deflection

2404/1372 . . . anti-deflection

2404/1373 . . . means for varying width

2404/1374 . . . means for varying longitudinal length

2404/1375 . . . means for assemble/disassemble

2404/138 . . . other

2404/1381 . . . Hinge

2404/1385 . . . build up out of spar elements

2404/14 . . . Roller pairs

2404/141 . . . with particular shape of cross profile

2404/1411 . . . D-shape / cylindrical

2404/1412 . . . Polygonal / cylindrical

2404/1413 . . . Paddle / cylindrical

2404/1414 . . . complementary relief

2404/1415 . . . with male / female profiles

2404/1416 . . . toothed or cylindrical

2404/142 . . . arranged on movable frame

2404/1421 . . . rotating, pivoting or oscillating around an axis, e.g. parallel to the roller axis

2404/14211 . . . the axis being one the roller axis, i.e. orbiting roller

2404/14212 . . . rotating, pivoting or oscillating around an axis perpendicular to the roller axis

2404/1422 . . . reciprocating

2404/1423 . . . circulating on a path, e.g. not enclosing an area
Other features of rollers composed of several layers
Selective features of rollers
- Magnetic
- Light weighted
- Easy deformable
- With electro-conductive layer
- With wear resistance
- Other features of rollers

Other features of rollers
- Noise limiting roller
- Incorporating element used for control, e.g. IC tag
- Belts
- Plan profile
- Edge structure
- Cross section profile
- Round belt
- Multiplicity of round belts spaced out each other
- Flat belt
- Flat belt wider than width of transported material
- With protrusions on inner side: Beads
- V-belt
- Details of edges
- With auxiliary handling means
- Pocket or gripper type
- Integrially attached to or part of belt material
- Blade, plate, finger
- On two opposite belts or set of belts, i.e. having active handling section cooperating with and facing to each other
- Dog pins, i.e. details of construction or arrangement
- Rotary means, e.g. rollers
- Penetrating means
- Longitudinal profile
- Endless helicoidal spring
- Timing belts
- Double-sided timing belts
- With portions of different thickness
- Driving or guiding arrangements
- Details of drive roller
- Arrangement for varying outer diameter, e.g. for adjusting speed or belts
- Details of idler roller
- Relative position of driving and idler rollers
- For performing transport along a path curved according to an axis parallel to the transport surface
- Arrangement for selectively changing the relative position of the driving and idler rollers
- Arrangement for varying the guiding or transport length
- Arrangement for tensioning
- Arrangement of endless belt
- Twisted around an axis parallel the transport direction
- Arrangement of non endless belt
- Wrapping/unwrapping arrangement
- Particular arrangement of belt, or belts
- Arrangement of belts, or belt(s) / roller(s) facing each other for forming a transport nip
- Forming curved transport path
- Forming serpentine transport path
- Means for changing the transport path, e.g. deforming, lengthening
- Means for engaging or disengaging belts into or out of contact with opposite belts, rollers or balls
- Arranged on a movable frame, e.g. pivoting...
Shafts, cylinders, drums, spindles

Chains

Arrangement of side-by-side chains

Means for varying cross-section

Details of guiding

Details of cross section profile
2404/6512 . . . covering only a part of the surface
2404/6513 . . . Strip-shaped built-up surface
2404/652 . . . permanent attachment
2404/6521 . . . Coating
2404/66 . . . Flexible surface
2404/661 . . . Bristles, brushes
2404/662 . . . involving inflatable elements
2404/663 . . . Elastic, supple built-up surface
2404/6631 . . . Floating built-up surface
2404/660 . . . Other elements in face contact with handled material
2404/661 . . . Longitudinally-extending strips, tubes, plates, or wires
2404/6611 . . . arranged to form a channel
2404/66111 . . . and shaped for curvilinear transport path
2404/66112 . . . and displaceable for changing direction of transport
2404/6612 . . . and shaped for curvilinear transport path
2404/662 . . . Transversely-extending bars or tubes
2404/6621 . . . with variable cross-section, e.g. inflatable
2404/6622 . . . Details of longitudinal profile
2404/66221 . . . Concave
2404/6623 . . . gate arrangement
2404/663 . . . Oscillating, pivoting around an axis parallel to face of material, e.g. diverting means
2404/6631 . . . Juxtaposed diverting means with each an independant actuator
2404/6632 . . . Wedge member
2404/6633 . . . Sword member, i.e. member contacting the surface of material with an edge portion
2404/664 . . . reciprocating perpendicularly to face of material, e.g. pushing means
2404/665 . . . rotating around an axis parallel to face of material and perpendicular to transport direction, e.g. star wheel
2404/6651 . . . having at least one element, e.g. stacker/inverter
2404/6652 . . . having two elements diametrically opposed
2404/6653 . . . having 3 or 4 elements
2404/6654 . . . having more than 4 elements
2404/6655 . . . Means for holding material on element
2404/66551 . . . Suction means
2404/66552 . . . peripheral means closing the area formed between the transport elements
2404/6656 . . . Means for disengaging material from element
2404/6657 . . . Means for varying the space between the elements
2404/6658 . . . Means for introducing material on elements
2404/66581 . . . in a direction parallel to the axis of rotation of elements
2404/66582 . . . multiple, i.e. for introducing material selectively, alternatively or simultaneously at different angular positions at the periphery
2404/6659 . . . particular arrangement
2404/66591 . . . Pair of opposite elements rotating around parallel axis, synchronously in opposite direction
2404/666 . . . rotating around an axis perpendicular to face of material
2404/6661 . . . Paddle wheel
2404/6662 . . . Disc shaped
2404/6663 . . . Helical or worm shaped

2404/67 . . . rotating around an axis parallel to face of material and parallel to transport direction
2404/68 . . . reciprocating in transport direction
2404/69 . . . Other means designated for special purpose
2404/691 . . . Guiding means extensible in material transport direction
2404/6911 . . . by unwinding from storage section
2404/692 . . . Chute, e.g. inclined surface on which material slides by gravity
2404/6922 . . . Shaft-like element channel
2404/693 . . . Retractable guiding means, i.e. between guiding and non guiding position
2404/694 . . . Non driven means for pressing the handled material on forwarding or guiding elements
2404/6942 . . . in sliding contact with handled material
2404/695 . . . Paternoster type
2404/696 . . . Ball, sphere
2404/6961 . . . Driving means
2404/70 . . . Other elements in edge contact with handled material, e.g. registering, orientating, guiding devices
2404/71 . . . Adaptor, mask, i.e. restricting the working area of the parts for transporting or guiding the handled material
2404/72 . . . Stops, gauge pins, e.g. stationary
2404/721 . . . adjustable
2404/722 . . . movable in operation
2404/723 . . . formed of forwarding means
2404/7231 . . . by nip rollers in standby
2404/7232 . . . by nip rollers in reversed rotation
2404/724 . . . formed of sensing means
2404/725 . . . retractable
2404/73 . . . Means for sliding the handled material on a surface, e.g. pushers
2404/731 . . . moved in a path enclosing an area
2404/7312 . . . by means of chains
2404/732 . . . in a direction perpendicular to a feeding/delivery direction
2404/733 . . . reciprocating
2404/74 . . . Guiding means
2404/741 . . . movable in operation
2404/7412 . . . retractable
2404/7414 . . . pivotable
2404/742 . . . for guiding transversely
2404/743 . . . for guiding longitudinally
2404/7431 . . . along a curved path

2405/00 Parts for holding the handled material
2405/10 . . . Cassettes, holders, bins, decks, trays, supports or magazines for sheets stacked substantially horizontally
2405/11 . . . Parts and details thereof
2405/111 . . . Bottom
2405/1111 . . . with several surface portions forming an angle relatively to each other
2405/1112 . . . with stepped surface portions
2405/1113 . . . with surface portions curved in width-wise direction
2405/11131 . . . forming a wavy profile
2405/1114 . . . with surface portions curved in lengthwise direction
2405/11141 . . . forming wavy profile
Cassettes, holders, bins, decks, trays, supports or magazines for sheets stacked on edge.

Parts and details thereof.

Bottom.

with several surface portions forming an angle relatively to each other.

end supports.

sides.

Pocket like holder.

details of bottom.

Other features of supports for sheets.

Supports for sheets fully removable from the handling machine, e.g. cassette.

and serving also as package.

Trolley, cart, i.e. support movable on the floor.

with integrated handling means, e.g. separating means.

Supports for sheets partially insertable - extractable, e.g. upon sliding movement, drawer.

Shutter type element, i.e. involving multiple interlinked support elements.

with means to span a long self-supporting length.

for avoiding relative movement between sheets and support during insertion or extraction.

Cantilever finger member, e.g. reciprocating in parallel to plane of handled material.

Cantilever during insertion but supported on both sides of the pile upon full insertion.

between operative position and non operative position.

with integrated handling means, e.g. separating means.

Compartmented support.

Juxtaposed compartments.

for storing articles horizontally or slightly inclined.

Feed tray juxtaposed to discharge tray.

for storing articles vertically or inclined (> 45).

Feed tray juxtaposed to discharge tray.

Superseded compartments.

Feed tray superposed to discharge tray.

discharge tray superposed to feed tray.

Holder with cylindrical section.

Means for moving support.

shifting transversely to transport direction, e.g. for handling stepped piles.

in closed loop.

rail guided means, e.g. without permanent interconnection.

vertically.

around an axis, e.g. horizontal.

Multiple support.

Movable from storage of support, e.g. stack of empty support.

holders, supports for rolls.

Supports for rolls fully removable from the handling machine.

and serving also as package.

Trolley, cart, i.e. support movable on the floor.

for both full and empty (or partial) roll.

Carts with full reels placed laterally one beside the other.
Gripping means
Means for achieving gripping/releasing operation
Details of the gripping parts releasably connected to transporting means
Rail guided gripping means running in closed turntable as for instance a cylinder, a disk or a rotary gripping arms, i.e. integrated in a rotary element reciprocating in arcuate paths
Grippers for bobbins, i.e. rolls
Supports for rolls partially removable from the movable in transport direction, e.g. on a portion of another part pivoting the movable gripping part towards the other part
Details of gripping surface
Pair of L-shaped reciprocating jaws
Retractable parts
Pair of L-shaped reciprocating jaws
Belts
Rollers
Cart comprising splicing means
Cart holding roll placed onto another cart comprising splicing means
with air bearing, e.g. Luftkissen
Overhead means, gantry
Supports for partially removable from the handling machine
Supports for storing rolls
Palette
combined with a frame for superposing several palettes
Rib-cage bin
Shafts for winding/unwinding
Radially extending end abutments
Active holding elements, e.g. inflatable bladders
engaging the side portion of the web roll
Passive holding elements, e.g. spring-biased pins
Means for penetrating into the core material, e.g. for transmitting torque
Grippers for bobbins, i.e. rolls
center gripper (inside the core)
outer gripper (on circumference)
Gripping means
oscillating in arcuate paths
reciprocating
Rotary gripping arms
with relative movement of the arms relatively to the axis of rotation during rotation
with means for changing the length of the arms during rotation
Rotary gripping arms, i.e. integrated in a rotary element as for instance a cylinder, a disk or a turntable
arranged on opposite and synchronised rotary element
Rail guided gripping means running in closed loop, e.g. without permanent interconnecting means
with permanent interconnection allowing variable spacing between the grippers
with permanent interconnection and determined spacing between the grippers
details of interconnection, e.g. chain, link
releasably connected to transporting means
Details of the gripping parts
Compliant material
Retractable parts
Pair of L-shaped reciprocating jaws
laterally projecting from feeding direction
Details of gripping surface
Means for achieving gripping/releasing operation moving only one of the gripping parts towards the other
pivoting the movable gripping part towards the other part
movable in transport direction, e.g. on a portion of the transport path of the gripping means
Details of gripper orientation
Gripping mouth orientated in direction of gripper displacement
and varying its orientation after gripping
Associated control means
Penetrating means
Means using fluid
made only for exhausting gaseous medium
producing fluidised bed
for handling material along a curved path, e.g. fluidised turning bar
pivoting around an axis perpendicular to the axis of the guided material
for handling material along preferably rectilinear path, e.g. nozzle bed for web
Details of the part distributing the air cushion
Porous material
Multiple nozzles arrangement
Adjustable impact angle
producing gas blast
Fan
Axial
Nozzles
adjustable impact angle
pressure arrangement for compensating weight of handled material
in combination with rollers or drums
with selectively operated air supply openings
rotary pressurized means, e.g. cylinder, drum, shaft, spindle
made only for liquid medium
for spraying liquid
nozzles
Suction means
Suction box; Suction chambers
for accumulating a loop of handled material
incorporating means for transporting the handled material against suction force
Rollers
Suction belts
integral in feed table
Suction distributing means
for variable distribution in the direction of transport
switchable suction elements
details of the openings in the belt, e.g. shape, distribution
belt with alternated perforated and non perforated sections in transport direction
Overhead suction belt, i.e. holding material against gravity
Rotary suction means, e.g. roller, cylinder or drum
arranged for rotating while moving along material to be handled, e.g. rolling on material
arranged for planetary movement on rotary support means
arranged for linear movement, e.g. on reciprocating support
Details on suction openings
rotating around an axis perpendicular to the surface of handled material, e.g. disk
arranged on movable frame
Suction grippers
Other means designed for special purposes

Safety means, e.g. for preventing injury to operator

Means preventing illegal operation

Means for manual intervention of operator

Manual feeding

means for observing the handled material during its handling

Means for preventing damage of handled material

Controlling atmosphere confining the handled material

involving humidity control means

Protective cover

Means for controlling access to the area confining the handled material

Means for adding commercial value

Sound producing means

Animation displaying means

Optic means, e.g. transparent body

Built up optic means, e.g. magnifying glass

Static information displaying means, e.g. logo

Means for protecting parts of handling machine

Means for making dustproof

Specific machines

for handling sheet(s)

Sorters or machines for sorting articles

with stationary location in space of the bins and a diverter per bin

with stationary location in space of the bins and an in-feed member movable from bin to bin

pivoting in-feed member

with variable location in space of the bins relative to a stationary in-feed path

and variable bin capacity

means for shifting articles contained in at least one bin, e.g. for displacing the articles towards processing means as stapler, perforator

performing alignment in the totality or a large number of bins at a time

performing alignment in one bin or a limited number of bins at a time

performing extraction of the sheets from the bin

combination of shifting means for performing shifting in several directions

non sort tray arrangement, i.e. high capacity tray for collecting multiple set

above sorting trays

beneath sorting trays

Combination of several sorting modules

stationary stapler

movable stapler

movable from bin to bin

movable transversely to direction of transport

reciprocating relatively to the bin

means for replenishing stapler with staples

means for changing size of staple

head unit separate from anvil unit

Wall or kiosk dispenser, i.e. for positively handling or holding material until withdrawal by user

for handling web(s)

Accumulators

Coil type accumulator
2408/212 . . . of zigzag-type
2408/213 . . . with several cascaded loops
2408/214 . . . loop hanger accumulator
2408/215 . . . supported by vacuum or blown air
2408/216 . . . roller with accumulated material wound around it (scrap roll)
2408/217 . . . of rollers type, e.g. with at least one fixed and one movable roller
2408/2171 . . . the position of the movable roller(s), i.e. the web loop, being positively actuated
2408/2172 . . . several cascaded loops of rollers
2408/2173 . . . the rollers wrapped by the web being rotationally driven otherwise than by web
2408/2174 . . . belt or similar device for carrying web through the accumulator
2408/22 . . . Splicing machines
2408/221 . . . features of splicing unit
2408/2211 . . . splicing unit located above several web rolls arranged parallel to each other
2408/23 . . . Winding machines
2408/231 . . . Turret winders
2408/2312 . . . with bedroll, i.e. very big roll used as winding roller
2408/23121 . . . and transfer pad (to attach leading edge to new core)
2408/23122 . . . with integrated core supply
2408/2313 . . . with plurality of reel supporting or back-up rollers travelling around turret axis
2408/2315 . . . specified by number of arms
2408/23152 . . . with two arms
2408/23155 . . . with three arms
2408/23157 . . . with more than three arms
2408/232 . . . Winding beds consisting of two rollers
2408/2321 . . . with winding bed supplied with vacuum or compressed air
2408/2324 . . . The winding rollers having different properties
2408/2326 . . . at least one of the winding rollers being movable
2408/233 . . . Central support turret
2408/234 . . . Hand-held winding device
2408/235 . . . Cradles
2408/236 . . . Pope-winders with first winding on an arc of circle and secondary winding along rails
2408/2362 . . . with two secondary winding spools, e.g. on separate carriages
2408/2364 . . . with additional element for facilitating web roll change
2408/237 . . . with substantially continuous horizontal movement of roll support, e.g. Metso-Type
2408/2371 . . . Modified Pope-winders with secondary winding on a arc of a circle
2408/238 . . . Machines for test or simulation purposes

B65H
B65H

2513/00 Dynamic entities; Timing aspect

2513/10 . Speed
2513/102 . Reference
2513/104 . Relative speed
2513/106 . Variation; Irregularities
2513/108 . Passage from one speed to another speed
2513/11 . angular
2513/112 . of the yarn balloon
2513/114 . Converting or comparing angular speed to linear speed, e.g. when detecting remaining length of web roll

2513/20 . Acceleration or deceleration
2513/21 . Acceleration
2513/212 . angular
2513/22 . Deceleration
2513/222 . angular
2513/30 . Kinetic energy
2513/40 . Movement
2513/41 . Direction of movement
2513/412 . Direction of rotation of motor powering the handling device
2513/42 . Route, path
2513/50 . Timing
2513/51 . Sequence of process
2513/511 . relating to a particular timing for sensing a variable
2513/512 . Stopping
2513/514 . Starting
2513/52 . Age; Life time
2513/53 . duration of event
2513/54 . Chronology of event

2515/00 Physical entities not provided for in groups B65H 2511/00 or B65H 2513/00

2515/10 . Mass; Weight
2515/11 . Mass flow rate
2515/112 . Specific weight
2515/114 . Denier
2515/116 . Inertia
2515/12 . Density
2515/20 . Volume
2515/21 . Volume flow rate
2515/212 . of air
2515/30 . Force; Stress
2515/31 . Tensile force
2515/312 . in direction perpendicular to transport direction
2515/314 . Tension profile, i.e. distribution of tension, e.g. across the material feeding direction or along diameter of web roll
2515/32 . Torque; Moment

2515/322 . . . Braking torque
2515/34 . . . Pressure
2515/342 . . . Fluid pressure
2515/37 . . . Elasticity modulus
2515/40 . . . Temperature
2515/41 . . . Heat conductivity
2515/50 . . . Vibrations; Oscillations
2515/60 . . . Optical characteristics, e.g. colour, light
2515/70 . . . Electrical characteristics
2515/702 . . . Voltage
2515/704 . . . Current
2515/706 . . . Power
2515/708 . . . Resistance
2515/71 . . . Magnetic properties
2515/712 . . . Capacitance
2515/714 . . . Inductance
2515/716 . . . Static electricity
2515/80 . . . Miscellaneous
2515/805 . . . Humidity
2515/81 . . . Rigidity; Stiffness; Elasticity
2515/815 . . . Slip
2515/82 . . . Sound; Noise
2515/83 . . . Environmental conditions, i.e. in the area confining the handled material or the handling machine
2515/84 . . . Quality
2515/842 . . . Condition, e.g. degree of wear, presence of wrinkles

2519/00 Chemical characteristics

2551/00 Means for control to be used by operator; User interfaces

2551/10 . Command input means
2551/11 . Slidable members
2551/12 . Rotating members
2551/13 . Remote control devices
2551/132 . . . Speech recognition
2551/14 . . . Switches; Selectors (contact switches B65H 2553/25)
2551/15 . . . Push buttons; Keyboards
2551/152 . . . Pedals
2551/16 . . . Levers; Joysticks
2551/18 . . . Graphical interactive displays; Mouses; Touchscreens
2551/185 . . . Voice actuated input means
2551/20 . . . Display means; Information output means
2551/21 . . . Monitors; Video displays
2551/212 . . . Liquid crystal display [LCD]
2551/22 . . . Numerical displays
2551/23 . . . Analog displays
2551/24 . . . Voice generating means
2551/25 . . . Printing or plotting means
2551/26 . . . for input variables
2551/27 . . . for output variables
2551/28 . . . Sound generating means
2551/29 . . . Means displaying permanently a particular information, e.g. mark, ruler

2553/00 Means for sensing, detecting or otherwise used for control

2553/10 . using fluid
2553/11 . pneumatic
Actuating means

Angular

Linear

Arrangement of the sensing means and the element to be sensed

Details of intermediate means between the sensing means and the element to be sensed

RFID sensor

Encoder, e.g. rotary

Photoelectric detectors

Magnetic, e.g. linear solenoids

Hydraulic

Hydraulic

Mechanical means

Illumination arrangement

Scanning means

involving light guide

Bar code reader

Cameras

Optical fibres

Linear stepper motor

Linear induction motors

Inflatable element

material

to the direction of transport of the handled material

Multiple sensors in a direction perpendicular to the direction of transport of the handled material

Details of intermediate means between the sensing means and the element to be sensed

Mechanical means

Contact arms; Levers; Antennas

Impact generating means

involving vibrating element

Arrangement of the sensing means

on a movable element

with regard to the direction of transport of the handled material

involving barrier arrangements, i.e. emitter facing a receptor element

involving receptor receiving light reflected by a reflecting surface and emitted by a separate emitter

Array arrangement, i.e. row of emitters or detectors

Means for control not provided for in groups

B65H 2551/00 - B65H 2555/00

Means for control not provided for in groups

B65H 2551/13

Powering means

Servomotors

D.C. motors

in derivation; Shunt motors

D.C. motors

Servomotors

piezoelectric

Stepper motors

piezolectric

Multi-axis

Robots

Automatic guided vehicle system

Powering means

Electrostatic forces

Magnets

for signal transmission

wireless (input by remote control devices

using sound

Network

Data carrier, e.g. chip, transponder, magnetic strip

Calculating methods; Controlling methods

involving a particular data profile or curve

involving an average value

involving a standard deviation

Modular control, i.e. systems which work independently or partially dependently on other systems

with key characteristics based on open loop control

with key characteristics based on feed forward control

with key characteristics based on closed loop control

characterised by PID control

characterised by function other than PID for the transformation of input values to output values, e.g. mathematical

Control systems architecture or components, e.g. electronic or pneumatic modules; Details thereof

for converting, e.g. A/D converters

for modulating frequency or amplitude

for digital control, e.g. for generating, counting or comparing pulses

for analog control, e.g. proportional, integral or differentiated

for timing

Clocks; Timers

Sequence controllers

Stroboscopes

for fluid control

Rotary valve

for neural adaptive control

Use of particular electromagnetic waves, e.g. light, radiowaves or microwaves

Laser

infra-red

ultraviolet

Polarized light

X-ray

Particle radiation

Details of processes or procedures

for calibrating
Problem to be solved or advantage achieved

- Ensuring correct operation
- Avoiding or preventing undesirable effects
- Centrifugal force effect
- Deformation of part of handling machine
- Smearing
- Collapsing, e.g. of piles
- Collisions
- Environmental change in the area confining the handled material
- Dynamic air effects
- Gravity effects, e.g. effect of weight of handled material
- Centrifugal force effect
- Deformation of part of handling machine
- Damages to handling machine
- Smearing
- Collapsing, e.g. of piles
- Collisions
- to particular parts of material
- Edges
- Surface
- Permanent deformation
- Jam
- Damages to handling machine
- Clogging
- Soiling
- Pollution
- Oxidation
- Other problems
- Over stacking
- Skewing of handled material during handling
- Adhering of handled material to another handled material or to part of the handling machine
- Facilitating or easing
- Removability or inter-changeability of machine parts, e.g. for maintenance
- Manual handling of handled material
- Manual handling of handling machine
- Increasing or maximizing
- entities relating to handled material
- entities relating to handling machine
- Capacity
- Versatility
- Life span
- Diminishing, minimizing or reducing
- entities relating to handled material
- Waste of handled material
- entities relating to handling machine
- Noise
- Wear of friction surface
- Required space
- Vibration
- by using mass damper
- by using electro-rheological fluid [ERF]
- Cost of application or use, e.g. energy, consumable
- Refurbishing; Renewing the handling machine; Upgrading modifying functions of the handling machine

Handled material; Storage means

- Handled articles or webs
- Dimensional aspect of article or web
- Plane geometry, contour
- Geometric shape
- disk
- triangle
- irregular shape
- tabbed sheet
- Section geometry
- shape
- U-shape
- circular segment
corruptions
- Folded article or web
- Fan-folded material or zig-zag or leporello
- Z-folded
- C-folded
- Asymmetric folded material
- variable thickness
- thicker edges, e.g. reinforced
- Splice
- Size
- of sheets
- large formats, i.e. above A3
- of webs
- strip, tape, narrow web
- Surface aspects
- Perforations
- arranged linearly
- transversally
- where perforations serve for handling
- Projecting portions
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2701/1241</td>
<td>register marks</td>
</tr>
<tr>
<td>2701/12411</td>
<td>line</td>
</tr>
<tr>
<td>2701/1242</td>
<td>printed information</td>
</tr>
<tr>
<td>2701/12422</td>
<td>codes or the like which can be used for further processing, e.g. relative to consumed or still available material</td>
</tr>
<tr>
<td>2701/1243</td>
<td>hologram</td>
</tr>
<tr>
<td>2701/1244</td>
<td>RFID [Radio Frequency Identification Data] transponder</td>
</tr>
<tr>
<td>2701/1245</td>
<td>Partial treatment</td>
</tr>
<tr>
<td>2701/1252</td>
<td>for facilitating sliding contact</td>
</tr>
<tr>
<td>2701/12521</td>
<td>of folded article or web</td>
</tr>
<tr>
<td>2701/125212</td>
<td>Fold, spine portion of folded article</td>
</tr>
<tr>
<td>2701/125214</td>
<td>Side opposite to spine portion of folded article</td>
</tr>
<tr>
<td>2701/12522</td>
<td>corner</td>
</tr>
<tr>
<td>2701/12529</td>
<td>Piled package</td>
</tr>
<tr>
<td>2701/126</td>
<td>Nature of material</td>
</tr>
<tr>
<td>2701/1271</td>
<td>Physical features of handled article or web</td>
</tr>
<tr>
<td>2701/12712</td>
<td>Transparent</td>
</tr>
<tr>
<td>2701/12714</td>
<td>Magnetic</td>
</tr>
<tr>
<td>2701/12716</td>
<td>Elastic</td>
</tr>
<tr>
<td>2701/12718</td>
<td>Porous or permeable</td>
</tr>
<tr>
<td>2701/12719</td>
<td>Photosensitive, e.g. exposure, photographic or phosphor</td>
</tr>
<tr>
<td>2701/1272</td>
<td>Composite material</td>
</tr>
<tr>
<td>2701/12722</td>
<td>including layer with adhesive properties</td>
</tr>
<tr>
<td>2701/127222</td>
<td>Encapsulated adhesive</td>
</tr>
<tr>
<td>2701/127224</td>
<td>distributed only on the part of the surface of the material</td>
</tr>
<tr>
<td>2701/12724</td>
<td>including layer with magnetic properties</td>
</tr>
<tr>
<td>2701/12726</td>
<td>including detachable components</td>
</tr>
<tr>
<td>2701/127262</td>
<td>distributed only on the part of the surface of the material</td>
</tr>
<tr>
<td>2701/12727</td>
<td>including layer with anti-adhesive properties</td>
</tr>
<tr>
<td>2701/12728</td>
<td>Liquid soaked material</td>
</tr>
<tr>
<td>2701/1273</td>
<td>Metal</td>
</tr>
<tr>
<td>2701/12732</td>
<td>Aluminium</td>
</tr>
<tr>
<td>2701/1274</td>
<td>Textile, fibre (for filamentary material B65H 2701/31 and subgroups)</td>
</tr>
<tr>
<td>2701/12742</td>
<td>Fibreglass</td>
</tr>
<tr>
<td>2701/1275</td>
<td>Plastic</td>
</tr>
<tr>
<td>2701/12752</td>
<td>Polymer film</td>
</tr>
<tr>
<td>2701/1276</td>
<td>Cardboard</td>
</tr>
<tr>
<td>2701/12762</td>
<td>Corrugated</td>
</tr>
<tr>
<td>2701/12764</td>
<td>Cut-out, single-layer, e.g. flat blanks for boxes</td>
</tr>
<tr>
<td>2701/12766</td>
<td>Cut-out, multi-layer, e.g. folded blanks or boxes</td>
</tr>
<tr>
<td>2701/12768</td>
<td>Book covers and the like</td>
</tr>
<tr>
<td>2701/1277</td>
<td>Fibrous or compressible material</td>
</tr>
<tr>
<td>2701/1278</td>
<td>Hide, leather or skin</td>
</tr>
<tr>
<td>2701/128</td>
<td>Form of handled article or web</td>
</tr>
<tr>
<td>2701/1282</td>
<td>Piled package</td>
</tr>
<tr>
<td>2701/12822</td>
<td>Juxtaposed stacks</td>
</tr>
<tr>
<td>2701/12824</td>
<td>Web material folded in zig-zag form</td>
</tr>
<tr>
<td>2701/128242</td>
<td>Juxtaposed sets</td>
</tr>
<tr>
<td>2701/12826</td>
<td>Arrangement of sheets</td>
</tr>
<tr>
<td>2701/128262</td>
<td>Ordered set of articles forming one batch</td>
</tr>
<tr>
<td>2701/128263</td>
<td>wherein each article is offset from its neighbour in the pile</td>
</tr>
<tr>
<td>2701/128264</td>
<td>Pile of alternate articles of different properties, e.g. pile of working sheets with intermediate sheet between each working sheet</td>
</tr>
<tr>
<td>2701/128265</td>
<td>Ordered set of batches</td>
</tr>
<tr>
<td>2701/128266</td>
<td>wherein the batches are offset from each other, e.g. stepped pile</td>
</tr>
<tr>
<td>2701/128267</td>
<td>wherein the batches are separated by separator elements in the pile</td>
</tr>
<tr>
<td>2701/128268</td>
<td>Unordered set of articles</td>
</tr>
<tr>
<td>2701/128269</td>
<td>Marker arrangement</td>
</tr>
<tr>
<td>2701/12827</td>
<td>Interleaf layers</td>
</tr>
<tr>
<td>2701/128271</td>
<td>of folded sheet material</td>
</tr>
<tr>
<td>2701/128272</td>
<td>Z-folded</td>
</tr>
<tr>
<td>2701/128274</td>
<td>W-folded</td>
</tr>
<tr>
<td>2701/12828</td>
<td>Parts concerned of piled package</td>
</tr>
<tr>
<td>2701/128282</td>
<td>Sides</td>
</tr>
<tr>
<td>2701/128289</td>
<td>Bound, bundled or stapled stacks or packages</td>
</tr>
<tr>
<td>2701/128292</td>
<td>Stapled sets of sheets</td>
</tr>
<tr>
<td>2701/1284</td>
<td>Wound packages</td>
</tr>
<tr>
<td>2701/12842</td>
<td>of webs</td>
</tr>
<tr>
<td>2701/128422</td>
<td>Coreless</td>
</tr>
<tr>
<td>2701/12844</td>
<td>Parts concerned</td>
</tr>
<tr>
<td>2701/128442</td>
<td>Core</td>
</tr>
<tr>
<td>2701/128444</td>
<td>Helically wound material</td>
</tr>
<tr>
<td>2701/12846</td>
<td>Parts concerned</td>
</tr>
<tr>
<td>2701/12848</td>
<td>Dimensional aspect</td>
</tr>
<tr>
<td>2701/128482</td>
<td>Proportion</td>
</tr>
<tr>
<td>2701/128483</td>
<td>Diameter much larger than width, e.g. audio/video tape bobbin</td>
</tr>
<tr>
<td>2701/128484</td>
<td>Diameter substantially equal to width, e.g. toilet paper roll</td>
</tr>
<tr>
<td>2701/128485</td>
<td>Diameter much smaller than width</td>
</tr>
<tr>
<td>2701/128486</td>
<td>Non-cylindrical form, e.g. flat bobbin</td>
</tr>
<tr>
<td>2701/12849</td>
<td>in cartridge or similar packaging device</td>
</tr>
<tr>
<td>2701/12886</td>
<td>Several articles or webs processed together</td>
</tr>
<tr>
<td>2701/12862</td>
<td>Rolls and sheets</td>
</tr>
<tr>
<td>2701/12864</td>
<td>Superposed webs</td>
</tr>
<tr>
<td>2701/12879</td>
<td>Specific article or web</td>
</tr>
<tr>
<td>2701/1291</td>
<td>Bags, sachets and pouches or the like</td>
</tr>
<tr>
<td>2701/12912</td>
<td>Banknotes, bills and cheques or the like</td>
</tr>
<tr>
<td>2701/12914</td>
<td>Cards, e.g. telephone, credit and identity cards</td>
</tr>
<tr>
<td>2701/12916</td>
<td>Envelopes and articles of mail</td>
</tr>
<tr>
<td>2701/12918</td>
<td>Insert between web or strip layer, e.g. wire</td>
</tr>
<tr>
<td>2701/1292</td>
<td>Labels (carrying webs or liners B65H 2701/194)</td>
</tr>
<tr>
<td>2701/12922</td>
<td>for covering surfaces such as carpets, roads, roofs or walls</td>
</tr>
<tr>
<td>2701/12924</td>
<td>Napkins or tissues, e.g. dressing, towelings, serviettes, kitchen paper and compresses</td>
</tr>
<tr>
<td>2701/12926</td>
<td>Opened booklet</td>
</tr>
<tr>
<td>2701/12928</td>
<td>Printing plate</td>
</tr>
<tr>
<td>2701/1293</td>
<td>Sample, e.g. laminate</td>
</tr>
<tr>
<td>2701/12932</td>
<td>Signatures, folded printed matter, newspapers or parts thereof and books</td>
</tr>
</tbody>
</table>
2701/1934 . . . Sticky notes, e.g. sheets partially coated with temporary adhesive
2701/1936 . . . Tickets or coupons
2701/1938 . . . Veneer sheet
2701/194 . . . Web supporting regularly spaced adhesive articles, e.g. labels, rubber articles, labels or stamps
2701/19402 . . . Glue dots, arranged individually or in patterns
2701/19404 . . . Supporting second web with articles as precut portions
2701/1942 . . . Web supporting regularly spaced non-adhesive articles
2701/1944 . . . Wrapping or packing material
2701/20 . . . Features of handled material other than dimensional aspect, use, or nature
2701/30 . . . Handled filamentary material
2701/31 . . . Textiles threads or artificial strands of filaments
2701/311 . . . Slivers
2701/312 . . . Fibreglass strands
2701/3122 . . . extruded from spinnerets
2701/313 . . . Synthetic polymer threads
2701/3132 . . . extruded from spinnerets
2701/314 . . . Carbon fibres
2701/319 . . . Elastic threads
2701/32 . . . Optical fibres or optical cables
2701/33 . . . Hollow or hose-like material
2701/331 . . . leaving an extruder
2701/332 . . . Flattened hoses
2701/333 . . . Hoses for drip irrigation
2701/34 . . . electric cords or electric power cables
2701/341 . . . in a manufacturing process
2701/35 . . . Ropes, lines
2701/351 . . . in a manufacturing process
2701/352 . . . Clotheslines
2701/353 . . . Construction lines, e.g. masonry line or for gardening
2701/354 . . . Cutting lines, e.g. for grass cutting
2701/355 . . . Fishlines
2701/356 . . . Kitelines
2701/357 . . . Marking strings, e.g. pre-inked lines
2701/358 . . . Strings for guiding plants
2701/36 . . . Wires
2701/361 . . . Semiconductor bonding wires
2701/362 . . . Tying wires, e.g. for tying concrete reinforcement rods
2701/363 . . . Barbed wires
2701/364 . . . Wires used in fences
2701/365 . . . Aerial wires, e.g. for wireless telegraph installation on aircraft
2701/366 . . . Pintle for scanning paper machine fabrics
2701/37 . . . Tapes
2701/371 . . . Curved tapes, e.g. "Spreizband"
2701/372 . . . Ink ribbons
2701/373 . . . Spring steel
2701/374 . . . Warning bands, e.g. police warning tapes
2701/375 . . .Strapping tapes
2701/376 . . . Electrician's fish tapes
2701/377 . . . Adhesive tape
2701/3772 . . . Double-sided
2701/378 . . . Recording tape
2701/379 . . . Sealing tape
2701/38 . . . Thread sheet, e.g. sheet of parallel yarns or wires
2701/39 . . . Other types of filamentary materials or special applications
2701/391 . . . Spiral coiled hoses or cords
2701/3911 . . . Chains
2701/3912 . . . Fences made of wire
2701/3913 . . . Extruded profiled strands
2701/3914 . . . Irregular cross section, i.e. not circular
2701/3915 . . . Strings of lights, e.g. Christmas lighting
2701/3916 . . . Inserts between layers of wire, hose or yarn
2701/3917 . . . Fairied cables
2701/3918 . . . Surgical sutures
2701/3919 . . . USB, earphones, audio or video cables, e.g. for connecting small electronic devices such as MP3 players or mobile telephones
2701/50 . . . Storage means for webs, tapes, or filamentary material
2701/51 . . . Cores or reels characterised by the material
2701/511 . . . essentially made of sheet material
2701/5112 . . . Paper or plastic sheet material
2701/5114 . . . Metal sheets
2701/5116 . . . Wood veneer
2701/5118 . . . Textile material
2701/512 . . . moulded
2701/5122 . . . Plastics
2701/5124 . . . Metals
2701/5126 . . . Particles of fibres, e.g. lignocelluloses material
2701/5128 . . . Vitreous material
2701/513 . . . assembled mainly from rigid elements of the same kind
2701/5132 . . . Wooden planks or similar material
2701/5134 . . . Metal elements
2701/51342 . . . Moulded metal elements
2701/51344 . . . Metal profiles
2701/5136 . . . Moulded plastic elements
2701/514 . . . Elastic elements
2701/515 . . . assembled from parts made of different materials
2701/5152 . . . End flanges and barrel of different material
2701/51522 . . . Wooden barrel
2701/51524 . . . Paperboard barrel
2701/51526 . . . Metal barrel
2701/51528 . . . Plastic barrel
2701/512 . . . Integration of elements inside the core or reel
2701/5122 . . . Chemical agents
2701/5124 . . . Weights
2701/5126 . . . Magnets
2701/5128 . . . Heating or cooling devices
2701/513 . . . Adaptations of cores or reels for special purposes
2701/5132 . . . Tearable or fragile cores or reels
2701/5133 . . . Storage compartments for accessories
2701/5134 . . . Stackable or interlockable reels or parts of reels
2701/5135 . . . Dimensional aspect, e.g. non-cylindrical cores
2701/5136 . . . Arrangements for protecting connectors attached to the wound material
2701/5137 . . . Stopping the winding or unwinding of reels which do not feature spring motors
2701/5170 . . . Use of material
2701/71 . . . Special purposes; Special handling other than the normal handling

2801/00 Application field
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2801/03</td>
<td>Image reproduction devices</td>
</tr>
<tr>
<td>2801/06</td>
<td>Office-type machines, e.g. photocopiers</td>
</tr>
<tr>
<td>2801/09</td>
<td>Single-function copy machines</td>
</tr>
<tr>
<td>2801/12</td>
<td>Single-function printing machines, typically table-top machines</td>
</tr>
<tr>
<td>2801/15</td>
<td>Digital printing machines</td>
</tr>
<tr>
<td>2801/18</td>
<td>Stencil printing machines</td>
</tr>
<tr>
<td>2801/21</td>
<td>Industrial-size printers, e.g. rotary printing press</td>
</tr>
<tr>
<td>2801/24</td>
<td>Post-processing devices</td>
</tr>
<tr>
<td>2801/27</td>
<td>Devices located downstream of office-type machines</td>
</tr>
<tr>
<td>2801/31</td>
<td>Devices located downstream of industrial printers</td>
</tr>
<tr>
<td>2801/36</td>
<td>Plotting</td>
</tr>
<tr>
<td>2801/39</td>
<td>Scanning</td>
</tr>
<tr>
<td>2801/42</td>
<td>Die-cutting</td>
</tr>
<tr>
<td>2801/45</td>
<td>Audio or video tape players, or related mechanism</td>
</tr>
<tr>
<td>2801/48</td>
<td>Bookbinding</td>
</tr>
<tr>
<td>2801/51</td>
<td>Automobile</td>
</tr>
<tr>
<td>2801/54</td>
<td>Cigarette making</td>
</tr>
<tr>
<td>2801/57</td>
<td>Diaper manufacture</td>
</tr>
<tr>
<td>2801/61</td>
<td>Display device manufacture, e.g. liquid crystal displays</td>
</tr>
<tr>
<td>2801/63</td>
<td>Dunnage conversion</td>
</tr>
<tr>
<td>2801/66</td>
<td>Envelope filling machines</td>
</tr>
<tr>
<td>2801/69</td>
<td>Form fill-and-seal machines</td>
</tr>
<tr>
<td>2801/72</td>
<td>Fuel cell manufacture</td>
</tr>
<tr>
<td>2801/75</td>
<td>Labelling machines</td>
</tr>
<tr>
<td>2801/78</td>
<td>Mailing systems</td>
</tr>
<tr>
<td>2801/81</td>
<td>Packaging machines</td>
</tr>
<tr>
<td>2801/84</td>
<td>Paper-making machines</td>
</tr>
<tr>
<td>2801/87</td>
<td>Photovoltaic element manufacture, e.g. solar panels</td>
</tr>
<tr>
<td>2801/91</td>
<td>Recording tape manufacture</td>
</tr>
<tr>
<td>2801/93</td>
<td>Tyres</td>
</tr>
</tbody>
</table>

CPC - 2020.05