

## **54 Paper and cardboard processing, except bookbinding, and products insofar as production is concerned; advertising**

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### **54a Manufacture of boxes from cardboard**

(54a) (IPC: B31) Making paper articles; Working paper (making layered products not composed wholly of paper or cardboard 39a3-9/00)

**Notes:**

(1) The word "paper" in this class is to be interpreted as covering material worked in a manner analogous to paper, e.g. plastic sheet materials, laminated materials or metal foils. This class does not include making articles directly from paper pulp.

(2) This class is to be understood as restricted to adaptations or associations of handling sheets, webs, or blanks peculiar to paper-working, e.g. bag or box making, machinery. Handling sheets, webs, or blanks of wider applicability, irrespective of whether described or claimed only for paper-working machinery, is to be regarded as of a more comprehensive nature and as such classified in 47h.)

**54a1 (IPC: B31B) Making boxes, cartons, envelopes or bags**

**54a2 (IPC: B31C) Making wound articles**

**54a3 (IPC: B31D) Making other paper articles**

**54a4 (IPC: B31F) Mechanical working or deformation of paper or cardboard**

**54b Production of envelopes, paper sacks and bags; envelopes, letter cards, postcards, parcel addresses, labels, postal money orders, bank drafts, printed forms and tags**

**54b1 Preliminary operations for cardboard box production**

**54b2 Envelopes, letter cards, postcards, parcel addresses, labels, postal money orders, bank drafts, printed forms and tags**

**54c Production of cylinders, spools and tubes by winding or rolling paper and cardboard**

**54d Ornamenting paper and cardboard by means of rollers and press plates; punching and perforating paper and cardboard; folding and paper web creping; application of adhesive on paper and cardboard; production of lace paper; preparation of paper and cardboard for wrapping purposes**

**54e Production of articles from paper pulp**

**54f Processes and devices for the production of miscellaneous articles from paper, cardboard, vulcanised fibre, etc., and the articles as such insofar as their manufacture is concerned**

**54g Advertising and exhibiting**

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**54a Manufacture of boxes from cardboard****Preliminary operations for cardboard box production**

Treatment of cardboard without material removal: by means of rotary knives, grooving rollers, punches, edgers, rollers, shaping cutters and the like (cardboard shears 11b-10; longitudinal cutters 55e-4; transverse cutters 55e-5)

54a-1/01 Scoring, grooving without bending, simple denting, slotting, cutting without waste, cutting into pieces, splitting without waste, edge cutting, ruling, curving, bending, shaping and combined devices

54a-1/20 Bending of cardboard to produce grooves and slots, bulges and ridges the cardboard being motionless while being worked; combined tools for simultaneous working covered by 54a-1/01

54a-1/21 the cardboard being moved under the tool; combined tools covered by 54a-1/20

Working of cardboard with material removal: by means of punching, circular saws, knives, milling cutters, planes, grindstones, etc.

54a-2/01 Punching, piercing, perforating, (7c-11; 11e-8; 15e-2; 54d-3) finger hole and window punching, corner punching (general 54d-2)

54a-2/02 Cutting out, cutting to shape, splitting with waste (54b-1/60; 54b-3/60)

54a-2/03 Bevelling, grinding off, grooving and other processes with material removal

**Production of finished box blanks**

54a-3/01 Automatic pressing and punching machines

54a-3/02 Production of blanks from several parts by association or adhesion (54a-4/01; 54a-4/04; 54a-13)

54a-3/03 Miscellaneous, e.g. automatic box blank production (production of folded boxes 54a-4/04)

54a-3/04 Special devices for the production of blanks: stacking and counting blanks (54a-4/06); conveying and feeding devices, also in connection with machinery covered by 54a-1/01 – 54a-2/03 (54a-4/06), special machine drives, e.g. for generating intermittent feed, and for machines covered by 54a-1/01 – 54a-2/03; blank setting up marks, gauges, miscellaneous

**Conversion of cardboard into boxes**

Paper box machines in general (combined with packing process 81a-1)

54a-4/01 Folding the sides of blanks with prepared corners, including by sinking a plunger into a die; setting up opposite side edges; joining set-up edges; gluing-bottom to edge frame; gluing reinforcing bottoms; gluing faces in U-shaped set-up blanks; shaping plungers and strippers for these operations (54b-3/01)

54a-4/02 Tube formation (54b-3/50); opening and re-flattening tubular elements; closing bottoms, folding down end elements (81a-1)

54a-4/03 Formation of side walls by winding around a mandrel (54b-3/01; 54c), folding the blank round a mandrel or shaping block, also by sinking into a hollow die (54a-4/01); rotation of several mandrels, shaping blocks; machines with rotary table (54b-3/01); bending of edges by more than 90 degrees

54a-4/04 Adhesive-applying devices in box production (54b-1/70; 54b-3/60; 54d-6); joining edges to bottom by adhesive tape; gluing paper strips as reinforcements or adhesives; preparation of shipping blanks for later setting up into boxes; folding set-up boxes

54a-4/05 Combined box parts, covering; cutting open rimmed boxes

54a-4/06 Removing blanks from stacks and conveying to box-making machines, laying down, stacking (54a-3/04), counting boxes in box-making machines (15e-1; 15e-5 – 15e-11; 54b-1/80; 54b-3/65); conveyance or transportation devices in box-making machines; slideways, shafts, channels, arranging, turning and rotating box parts

54a-4/07 Special features connected to box-making machines: holding tools, tables, stands, also for the production of boxes by hand; fixing of handles, wire reinforcements,

rubber bands, threads for tearing boxes open (54b-1/20); edge and corner reinforcements; blocking devices with sensors, safety devices; finger protection, protection against breaking of machine elements (47a-, 18); drying; wetting; paraffinisation, making adhesive (54f-4/10), other features

#### Production of special boxes

- 54a-5/01 Processes for the production of cornered, circular, noncircular, polygonal, pyramidal boxes of special shape (81c-12 – 81c-14)
- 54a-5/02 Application of bottoms and tops (54c-3; 54f-2/15; 54f-2/30); edging boxes; production of boxes with folded-in bottoms; forming bottoms and tops; bottom application
- 54a-5/03 Production of boxes with necks, also with bent necks, and insertion of neck strips in boxes
- 54a-5/04 Production of boxes with projecting edges, boxes with folding tops, e.g. made of one blank, cellular boxes and other special boxes (54f; production of drawer-type boxes 54a-6)
- 54a-5/05 Production of boxes from cardboard adhesively lined with metal foil, cellophane, or the like, and laminated cardboard (55f-13; 55f-16)
- 54a-6 Manufacture of drawer boxes
- 54a-7/01 Box embossing and drawing presses (7c-15; 7c-16; 54f-1/05; 54f-1/15; 54f-2/15; 54f-2/30; 58b-12)
- 54a-7/02 Presses for the manufacture of boxes with necks, with protecting edges and other special boxes (54f)

#### **Joining cardboard by means of metal elements in box production; staples, rivets, etc., and fastening of metal elements, locks, etc. to boxes**

- 54a-8 Metal staples
- 54a-9 Machines for affixing staple strips
- 54a-10 Machines for affixing separate staples, hinges, nails, rivets, hollow and double-point rivets, eyes, locks, lock latches and the like (3c-11; 49g-13; 49g-17; 71c-60; 71c-101/00 – 71c-105/00)
- 54a-11 Machines for affixing preformed or machine-made wire staples (11a)

#### **Pasting of boxes**

- 54a-12 Box pasting machines (81b); wrapping during motion of box elements; folding of free edges inward; turning of boxes, whereby a band-shaped cover is pasted on; box edge forming; lining blanks in the production of boxes; covering closed boxes; special features and other operations in connection with box pasting machines
- 54a-13 Machines for pasting box edges and box corners

### **54a1 (IPC: B31B) Making boxes, cartons, envelopes or bags (combined making and filling 81a)**

#### **Note:**

**In this subclass, envelopes or bags are regarded as being essentially flexible containers, the final shape of which is determined by their contents. Boxes or cartons, on the other hand, are regarded as being essentially rigid or semi-rigid containers, the final shape of which is not determined by their contents. The term "boxes or cartons" is to be interpreted as including bags formed similarly to cartons, trays with upstanding side-walls, barrels, tubes and cups, other than articles formed by winding.**

#### **54a1-1/00 Box, carton, envelope or bag making machinery characterised by performing specific operations (machinery for performing operations of general application, see the appropriate subclasses)**

- 54a1-1/02 . Feeding or positioning sheets, blanks, or webs
- 54a1-1/04 . . Feeding sheets or blanks
- 54a1-1/06 . . . from stacks
- 54a1-1/08 . . . during envelope- or bag-making operations

- 54a1-1/10 . . Feeding or positioning webs
- 54a1-1/12 . . by air pressure or suction
- 54a1-1/14 . Cutting, e.g. perforating, punching, slitting, trimming
- 54a1-1/16 . . Cutting webs to form sheets or blanks
- 54a1-1/18 . . Slitting webs longitudinally
- 54a1-1/20 . . Cutting sheets or blanks
- 54a1-1/22 . . . Notching; Trimming edges of flaps
- 54a1-1/24 . . . Making window openings
- 54a1-1/26 . Folding sheets, blanks, or webs
- 54a1-1/28 . . around mandrels, including bottom-forming operations
- 54a1-1/30 . . . the mandrels moving
- 54a1-1/32 . . . . in circular paths
- 54a1-1/34 . . . . about their own axes
- 54a1-1/36 . . by continuously feeding same to stationary members, e.g. plates, ploughs, cores
- 54a1-1/38 . . . the members being forming-tubes
- 54a1-1/40 . . . . acting internally
- 54a1-1/42 . . . . acting externally
- 54a1-1/44 . . by plungers moving through folding dies
- 54a1-1/46 . . . and interconnecting side walls during such movement
- 54a1-1/48 . . . . by folding or tucking in locking flaps
- 54a1-1/50 . . . . . by interengaging tongues and slots
- 54a1-1/52 . . by reciprocating or oscillating members, e.g. fingers other than plungers and dies
- 54a1-1/54 . . . operating on moving material
- 54a1-1/56 . . by rotary members co-operating with blades
- 54a1-1/58 . . by moving endless belts
- 54a1-1/60 . Uniting opposed surfaces or edges; Taping
- 54a1-1/62 . . by adhesives
- 54a1-1/64 . . by applying heat or pressure
- 54a1-1/66 . . . high-frequency electric heating
- 54a1-1/68 . . by stitching, stapling, or riveting
- 54a1-1/70 . . . by corner stapling
- 54a1-1/72 . . by applying and securing strips or sheets
- 54a1-1/74 . Auxiliary operations
- 54a1-1/76 . . Opening and distending flattened articles
- 54a1-1/78 . . . mechanically
- 54a1-1/80 . . . pneumatically
- 54a1-1/82 . . Attaching windows
- 54a1-1/84 . . Forming valves or applying valve inserts
- 54a1-1/86 . . Forming integral handles or mounting separate handles (making separate handles by multi-step processes 54a3-1/06)
- 54a1-1/88 . . Printing or embossing
- 54a1-1/90 . . Attaching accessories not otherwise provided for, e.g. opening or closure devices, tear strings
- 54a1-1/92 . . Delivering
- 54a1-1/94 . . . singly or in succession
- 54a1-1/96 . . . . in overlapping arrangement
- 54a1-1/98 . . . . in stacks or bundles

### **Machinery for making boxes or cartons**

- 54a1-3/00 Machinery characterised by making boxes or cartons by folding single-piece sheets, blanks, or webs (54a1-5/00 takes precedence)**
- 54a1-3/02 . and having means for feeding or positioning sheets, blanks, or webs
- 54a1-3/14 . and having means for cutting, e.g. perforating, punching, slitting, trimming
- 54a1-3/26 . and having means for folding sheets, blanks, or webs
- 54a1-3/60 . and having means for uniting opposed surfaces or edges, or for taping
- 54a1-3/74 . and having means for effecting auxiliary operations

<b>54a1-5/00</b>	<b>Machinery characterised by making boxes or cartons by folding single-piece sheets which can be set-up from a collapsed condition, including setting-up and recollapsing to break creases</b>
54a1-5/02	. and having means for feeding or positioning sheets, blanks or webs
54a1-5/14	. and having means for cutting, e.g. perforating, punching, slitting, trimming
54a1-5/26	. and having means for folding sheets, blanks, or webs
54a1-5/60	. and having means for uniting opposed surfaces or edges, or for taping
54a1-5/74	. and having means for effecting auxiliary operations
<b>54a1-7/00</b>	<b>Machinery characterised by making lined or internally-reinforced boxes or cartons (54a1-11/00 takes precedence)</b>
54a1-7/02	. and having means for feeding or positioning sheets, blanks, or webs
54a1-7/14	. and having means for cutting, e.g. perforating, punching, slitting, trimming
54a1-7/26	. and having means for folding sheets, blanks, or webs
54a1-7/60	. and having means for uniting opposed surfaces or edges, or for taping
54a1-7/74	. and having means for effecting auxiliary operations
<b>54a1-9/00</b>	<b>Machinery characterised by making boxes or cartons having shouldered walls</b>
54a1-9/02	. and having means for feeding or positioning sheets, blanks, or webs
54a1-9/14	. and having means for cutting, e.g. perforating, punching, slitting, trimming
54a1-9/26	. and having means for folding sheets, blanks, or webs
54a1-9/60	. and having means for uniting opposed surfaces or edges, or for taping
54a1-9/74	. and having means for effecting auxiliary operations
<b>54a1-11/00</b>	<b>Machinery characterised by making boxes or cartons having partitions or like inserts not integral with walls (making partitions, inserts, or reinforcements for boxes or cartons 54a3)</b>
54a1-11/02	. and having means for feeding or positioning sheets, blanks, or webs
54a1-11/14	. and having means for cutting, e.g. perforating, punching, slitting, trimming
54a1-11/26	. and having means for folding sheets, blanks, or webs
54a1-11/60	. and having means for uniting opposed surfaces or edges, or for taping
54a1-11/74	. and having means for effecting auxiliary operations
<b>54a1-13/00</b>	<b>Machinery characterised by assembling drawer-and-shell boxes or cartons</b>
54a1-13/02	. and having means for feeding or positioning sheets, blanks, or webs
54a1-13/14	. and having means for cutting, e.g. perforating, punching, slitting, trimming
54a1-13/26	. and having means for folding sheets, blanks, or webs
54a1-13/60	. and having means for uniting opposed surfaces or edges, or for taping
54a1-13/74	. and having means for effecting auxiliary operations
<b>54a1-15/00</b>	<b>Machinery characterised by making covered or externally-reinforced boxes or cartons</b>
54a1-15/02	. and having means for feeding or positioning sheets, blanks, or webs
54a1-15/14	. and having means for cutting, e.g. perforating, punching, slitting, trimming
54a1-15/26	. and having means for folding sheets, blanks, or webs
54a1-15/60	. and having means for uniting opposed surfaces or edges, or for taping
54a1-15/74	. and having means for effecting auxiliary operations
<b>54a1-17/00</b>	<b>Machinery characterised by making other boxes or cartons by assembling several separate sheets, blanks, or webs</b>
54a1-17/02	. and having means for feeding or positioning sheets, blanks, or webs
54a1-17/14	. and having means for cutting, e.g. perforating, punching, slitting, trimming
54a1-17/26	. and having means for folding sheets, blanks, or webs
54a1-17/60	. and having means for uniting opposed surfaces or edges, or for taping
54a1-17/74	. and having means for effecting auxiliary operations

**Machinery for making envelopes or bags**

- 54a1-19/00 Machinery characterised by making rectangular envelopes or bags of that form, i.e. without structural provision at the base for thickness of contents** (54a1-21/00, 54a1-23/00 take precedence)
- 54a1-19/02 . and having means for feeding or positioning sheets, blanks, or webs
  - 54a1-19/14 . and having means for cutting, e.g. perforating, punching, slitting, trimming
  - 54a1-19/26 . and having means for folding sheets, blanks, or webs
  - 54a1-19/60 . and having means for uniting opposed surfaces or edges, or for taping
  - 54a1-19/74 . and having means for effecting auxiliary operations
- 54a1-21/00 Machinery characterised by making rectangular envelopes or bags of flat form, i.e. without structural provision at the base for thickness of contents, from sheets or blanks, e.g. from flattened tubes**
- 54a1-21/02 . and having means for feeding or positioning sheets, blanks or webs
  - 54a1-21/14 . and having means for cutting, e.g. perforating, punching, slitting, trimming
  - 54a1-21/26 . and having means for folding sheets or blanks
  - 54a1-21/60 . and having means for uniting opposed surfaces or edges, or for taping
  - 54a1-21/74 . and having means for effecting auxiliary operations
- 54a1-23/00 Machinery characterised by making rectangular envelopes or bags of flat form, i.e. without structural provision at the base for thickness of contents, from webs, e.g. from flattened tubular webs** (machinery characterised by cutting sheets or blanks from webs and working them to form such envelopes or bags 54a1-21/00)
- 54a1-23/02 . and having means for feeding or positioning sheets, blanks or webs
  - 54a1-23/14 . and having means for cutting, e.g. perforating, punching, slitting, trimming
  - 54a1-23/26 . and having means for folding sheets, blanks or webs
  - 54a1-23/60 . and having means for uniting opposed surfaces or edges, or for taping
  - 54a1-23/74 . and having means for effecting auxiliary operations
- 54a1-25/00 Machinery characterised by making pointed or tapered envelopes or bags**
- 54a1-25/02 . and having means for feeding or positioning sheets, blanks, or webs
  - 54a1-25/14 . and having means for cutting, e.g. perforating, punching, slitting, trimming
  - 54a1-25/26 . and having means for folding sheets, blanks, or webs
  - 54a1-25/60 . and having means for uniting opposed surfaces or edges, or for taping
  - 54a1-25/74 . and having means for effecting auxiliary operations
- 54a1-27/00 Machinery characterised by making interconnected envelopes or bags**
- 54a1-27/02 . and having means for feeding or positioning sheets, blanks, or webs
  - 54a1-27/14 . and having means for cutting, e.g. perforating, punching, slitting, trimming
  - 54a1-27/26 . and having means for folding sheets, blanks, or webs
  - 54a1-27/60 . and having means for uniting opposed surfaces or edges, or for taping
  - 54a1-27/74 . and having means for effecting auxiliary operations
- 54a1-29/00 Machinery characterised by making envelopes or bags with structural provision at the base for thickness or contents** (54a1-31/00 to 54a1-37/00 take precedence)
- 54a1-29/02 . and having means for feeding or positioning sheets, blanks, or webs
  - 54a1-29/14 . and having means for cutting, e.g. perforating, punching, slitting, trimming
  - 54a1-29/26 . and having means for folding sheets, blanks, or webs
  - 54a1-29/60 . and having means for uniting opposed surfaces or edges, or for taping
  - 54a1-29/74 . and having means for effecting auxiliary operations
- 54a1-31/00 Machinery characterised by making envelopes or bags with structural provision at the base for thickness of contents, from sheets or blanks, e.g. from flattened tubes** (54a1-33/00, 54a1-35/00 take precedence)
- 54a1-31/02 . and having means for feeding or positioning sheets, blanks or webs
  - 54a1-31/14 . and having means for cutting, e.g. perforating, punching, slitting, trimming
  - 54a1-31/26 . and having means for folding sheets, blanks or webs
  - 54a1-31/60 . and having means for uniting opposed surfaces or edges, or for taping

- 54a1-31/74 . and having means for effecting auxiliary operations
- 54a1-33/00 Machinery characterised by making envelopes or bags with structural provision at the base for thickness of contents, from sheets or blanks, e.g. from flattened tubes, the longitudinal axes of the envelopes or bags being parallel to the direction in which the sheets or blanks are fed**
- 54a1-33/02 . and having means for feeding or positioning sheets, blanks or webs
- 54a1-33/14 . and having means for cutting, e.g. perforating, punching, slitting, trimming
- 54a1-33/26 . and having means for folding sheets, blanks or webs
- 54a1-33/60 . and having means for uniting opposed surfaces or edges, or for taping
- 54a1-33/74 . and having means for effecting auxiliary operations
- 54a1-35/00 Machinery characterised by making envelopes or bags with structural provision at the base for thickness of contents, from sheets or blanks, e.g. from flattened tubes, the longitudinal axes of the envelopes or bags being perpendicular to the direction in which the sheets or blanks are fed**
- 54a1-35/02 . and having means for feeding or positioning sheets, blanks or webs
- 54a1-35/14 . and having means for cutting, e.g. perforating, punching, slitting, trimming
- 54a1-35/26 . and having means for folding sheets, blanks or webs
- 54a1-35/60 . and having means for uniting opposed surfaces or edges, or for taping
- 54a1-35/74 . and having means for effecting auxiliary operations
- 54a1-37/00 Machinery characterised by making envelopes or bags with structural provision at the base for thickness of contents, from webs, e.g. from tubular webs (machinery characterised by cutting sheets and blanks from webs and working them to form such envelopes or bags 54a1-31/00)**
- 54a1-37/02 . and having means for feeding or positioning sheets, blanks or webs
- 54a1-37/14 . and having means for cutting, e.g. perforating, punching, slitting, trimming
- 54a1-37/26 . and having means for folding sheets, blanks or webs
- 54a1-37/60 . and having means for uniting opposed surfaces or edges, or for taping
- 54a1-37/74 . and having means for effecting auxiliary operations
- 54a1-39/00 Machinery characterised by making lined envelopes or bags**
- 54a1-39/02 . and having means for feed or positioning sheets, blanks, or webs
- 54a1-39/14 . and having means for cutting, e.g. perforating, punching, slitting, trimming
- 54a1-39/26 . and having means for folding sheets, blanks or webs
- 54a1-39/60 . and having means for uniting opposed surfaces or edges, or for taping
- 54a1-39/74 . and having means for effecting auxiliary operations
- 54a1-41/00 Machinery characterised by making envelopes or bags of other specific form or construction**
- 54a1-41/02 . and having means for feeding or positioning sheets, blanks, or webs
- 54a1-41/14 . and having means for cutting, e.g. perforating, punching, slitting, trimming
- 54a1-41/26 . and having means for folding sheets, blanks or webs
- 54a1-41/60 . and having means for uniting opposed surfaces or edges, or for taping
- 54a1-41/74 . and having means for effecting auxiliary operations
- 54a1-43/00 Machinery characterised by making containers by shaping, otherwise than by folding, sheet material under pressure**
- 54a1-45/00 Machinery characterised by making containers having corrugated or pleated walls**
- 54a1-47/00 Hand tools for making envelopes, bags, boxes or cartons**
- 54a1-47/02 . for making envelopes or bags without preshaped bottoms
- 54a1-47/04 . for making envelopes or bags with preshaped bottoms
- 54a1-49/00 Processes not otherwise provided for (processes dependent on the use of specific machinery 54a1-1/00 to 54a1-45/00; forms or constructions of boxes, cartons, envelopes, or bags 81c)**
- 54a1-49/02 . for making boxes or cartons

54a1-49/04 . for making envelopes or bags

## **54a2 (IPC: B31C) Making wound articles, e.g. wound tubes**

### **Note:**

**The term "winding" in this subclass means forming two or more complete convolutions.**

### **54a2-1/00 Forming paper tubes or pipes by feeding at right angles to the winding mandrel centre line**

- 54a2-1/02 . Machines therefor having additional mandrels
- 54a2-1/04 . and forming a tube end into a container bottom
- 54a2-1/06 . and inserting into a tube end a bottom to form a container
- 54a2-1/08 . Accessories of machines therefor not otherwise provided for

### **54a2-3/00 Forming paper tubes or pipes by feeding obliquely to the winding mandrel centre line**

- 54a2-3/02 . and inserting into a tube end a bottom to form a container
- 54a2-3/04 . Seam processing

### **54a2-5/00 Forming paper tubes or pipes without mandrels**

### **54a2-7/00 Forming conical paper articles by winding (winding blanks 54a1)**

- 54a2-7/02 . Forming truncated cones
- 54a2-7/04 . . on two or more mandrels
- 54a2-7/06 . . . and inserting into a cone end a bottom to form a container
- 54a2-7/08 . Forming pointed cones
- 54a2-7/10 . . on two or more mandrels

### **54a2-9/00 Simultaneous forming of cylindrical and conical shapes by winding separate webs, e.g. forming bottles (winding blanks 54a1)**

### **54a2-11/00 Paper-winding machinery combined with other machinery**

- 54a2-11/02 . for additionally shaping the articles
- 54a2-11/04 . for applying impregnating by coating-substances during the winding
- 54a2-11/06 . for drying the wound and impregnated articles

### **54a2-13/00 Making wound articles not otherwise provided for**

**54a3 (IPC: B31D) Making other paper articles (making articles from wood fibre 39a7-5/00; making layered products not composed wholly of paper or cardboard 39a3-9/00; making cardboard and paper 55d, 55f, making articles from wood pulp 54e)**

### **Note:**

**This subclass is to be understood as covering making, otherwise than by winding, articles other than boxes, cartons, envelopes, bags, and tubes from paper, other than from paper pulp.**

### **54a3-1/00 Multiple-step processes for making flat articles**

- 54a3-1/02 . the articles being labels or tags (means and processes for attaching threads 52)
- 54a3-1/04 . the articles being napkins, handkerchiefs, towels, doilies, or the like
- 54a3-1/06 . the articles being handles

### **54a3-3/00 Making articles of cellular structure, e.g. insulating board**

- 54a3-3/02 . honeycombed structures
- 54a3-3/04 . cellular packaging articles, e.g. for bottles

### **54a3-5/00 Multiple-step processes for making three-dimensional articles (assembly of garlands 3e-1/00; making receptacles or containers 54a1; making tubes 54a1, 54a2)**

- 54a3-5/02 . including pressing
- 54a3-5/04 . including folding or pleating, e.g. Chinese lanterns



<b>54a4</b>	<b>(IPC: B31F) Mechanical working or deformation of paper or cardboard</b> (cutting, trimming 55e-4 – 55e-6, 55e-8, 55e-9; making layered products not composed wholly of paper or cardboard 39a3-9/00; multi-ply material, its manufacture 55f)
<b>54a4-1/00</b>	<b>Mechanical deformation of paper or cardboard without removing material including combined deformation and laminating</b> (superficial embossing combined with printing 15d-55, 15d-56; superficial embossing not combined with printing 75a; mechanical deformation during paper or board making 55d; kinds of paper or board 55f)
54a4-1/08	. Creasing or crumpling to produce multiple fold lines other than corrugating or zigzag folding
54a4-1/10	. . by rotary tools
54a4-1/12	. Crêping paper
54a4-1/14	. . by doctor blades arranged crosswise to the web
54a4-1/16	. . by elastic belts
54a4-1/18	. . by tools arranged in the direction of web feed
54a4-1/20	. Corrugating; Corrugating combined with laminating)
54a4-1/22	. . Making webs with undulations across the webs
54a4-1/24	. . Making webs with undulations in the direction of web feed
54a4-1/26	. . . by toothed cylinders
54a4-1/28	. . . . combined with uniting the corrugated webs to flat webs
54a4-1/30	. . . Tools secured to endless chains
54a4-1/32	. . Corrugating already corrugated webs
54a4-1/36	. Moistening and heating webs to facilitate mechanical deformation and drying deformed webs
<b>54a4-5/00</b>	<b>Splicing paper or cardboard sheets, strips, or webs; Reinforcing edges of paper or cardboard</b> (means for applying adhesive or glue 54d-6; stapling in box or like making 54a1)
54a4-5/02	. by crimpling or slotting
54a4-5/04	. by exclusive use of adhesives
54a4-5/06	. by adhesive tape
54a4-5/08	. . for reinforcing edges
<b>54a4-7/00</b>	<b>Processes for working paper not otherwise provided for</b>
54a4-7/02	. Breaking the coating on paper
<b>54b</b>	<b>Production of envelopes, paper sacks and bags; envelopes, letter cards, postcards, parcel addresses, labels, postal money orders, bank drafts, printed forms and tags</b>
	Envelope machines
54b-1/01	with folding flaps and fingers
54b-1/05	with folding rollers
54b-1/10	for the manufacture of lined envelopes
54b-1/15	for the manufacture of envelopes with windows (making paper transparent 45f-16)
54b-1/20	for the manufacture of envelopes with opening devices
54b-1/25	with printing devices
54b-1/50	Folding flaps, folding plates and other folding devices for envelope machines
54b-1/60	Cutting and punching devices for envelope machines (longitudinal and transverse cutters 55e-4, 55e-5, 55e-6, 55e-8; punching machines 54d-2)
54b-1/70	Devices for applying gum and glue for envelope machines (application of adhesive, general 54d-6)
54b-1/80	Sheet gathering and discharging devices for envelope machines (sheet delivering devices, general 15e-5 – 15e-10; sheet stacking devices 55e-5)
	Envelopes for letters
54b-2/01	of common type

54b-2/05	Window envelopes
54b-2/10	Safety envelopes
54b-2/18	Envelopes for open mail and printed matter
54b-2/20	Letter paper with sealing arrangements, letter cards
54b-2/30	Envelopes with opening devices
54b-2/35	Multipurpose envelopes, with reply, return receipts; connected envelopes
54b-2/40	Envelopes with several pockets
54b-2/50	Closing devices for envelopes
54b-2/60	Special envelope arrangements
	Paper bag and sack machines
54b-3/01	with formers and plungers
54b-3/10	with folding rollers and drums
54b-3/20	with folding flaps and fingers
54b-3/25	for the production of multilayer and lined bags
54b-3/30	for the production of cone-shaped bags
54b-3/35	for the production of valve sacks
54b-3/40	with printing devices
54b-3/45	with suction and compressed-air device
54b-3/50	Devices for making tubes for paper sack machines (manufacture of paper tubes 54c)
54b-3/55	Cutting devices for paper sack machines (longitudinal and transverse cutters 55e-4, 55e-5, 55e-6, 55e-8)
54b-3/60	Devices for applying gum and glue for paper sack machines (application of glue 54d-6)
54b-3/65	Paper gathering and discharging devices for paper sack machines (sheet delivering devices in general 15e-5 – 15e-10; sheet stacking devices 55e-5)
	Bags, pouches and sacks made of paper and the like, insofar as their production is concerned (as packaging material 81c-8, 81c-20 – 81c-22, 81c-26/02)
54b-4/01	Bags and paper sacks of common type (sacks in general 81c-8)
54b-4/10	Cone-shaped bags
54b-4/15	Multi-walled and lined bags, and paper sacks
54b-4/20	Valve sacks (filling and closing of sacks 81a-1, 81a-3/01, 81a-3/10)
54b-4/25	Automatically opening bags
54b-4/30	Bags with carrying devices
54b-4/35	Bags with closing devices
54b-4/40	Bags with several pockets
54b-4/45	Pay envelopes and sample bags
54b-4/50	Impregnated paper bags (impregnation of paper 55f-11/01)
54b-5/01	Postcards in general
54b-5/05	Typewriter postcards
54b-5/10	Postcards containing several parts and postcards with removable parts
54b-6/01	Parcel addresses, adhesive labels (labels for display purposes 54g-17; suitcase labels 33b-15/08; production of labels 15d-53, 15h-5/02, 54d-3/01)
54b-6/05	Wrappers
54b-7/01	Preprinted forms in general
54b-7/05	Preprinted forms for bookkeeping
54b-7/10	Financial papers, e.g. bank drafts, checks, tickets [for fares], cloakroom checks and the like
54b-7/15	Periodicals
54b-8/01	Machines for the manufacture of tags

54b-8/02 Tags (cloth marking labels 8f-13/01, 8f-13/02; labels for display purposes and label holders 54g-17; suitcase tags 33b-15/08, 33d-8/03; affixing of address cards 81c-17; eyelet setting machines for general purposes 71c-60/01, 71c-101/00; attaching eyelets on clothing 3c-11/01, 3d-37/02)

### **54b1 Preliminary operations for cardboard box production (manufacture of boxes 54a1)**

Treatment of cardboard without material removal: by means of rotary knives, grooving rollers, punches, edgers, rollers, shaping cutters and the like (cardboard shears 11b-10; longitudinal cutters 55e-4; transverse cutters 55e-5)

54b1-1/01 Scoring, grooving without bending, simple denting, slotting, cutting without waste, cutting into pieces, splitting without waste, edge cutting, ruling, curving, bending, shaping and combined devices

54b1-1/20 Bending of cardboard to produce grooves and slots, bulges and ridges the cardboard being motionless while being worked; combined tools for simultaneous working covered by 54b1-1/01

54b1-1/21 the cardboard being moved under the tool; combined tools covered by 54b1-1/20

Working of cardboard with material removal: by means of punching, circular saws, knives, milling cutters, planes, grindstones, etc.

54b1-2/02 Cutting out, cutting to shape, splitting with waste (54b2-1/60, 54b2-3/60)

54b1-2/03 Bevelling, grinding off, grooving and other processes with material removal

Production of finished box blanks

54b1-3/01 Automatic pressing and punching machines

54b1-3/03 Miscellaneous, e.g. automatic box blank production (production of folded boxes 54a1)

### **Joining cardboard by means of metal elements in box production; staples, rivets, etc., and fastening of metal elements, locks, etc. to boxes**

54b1-8 Metal staples

54b1-9 Machines for affixing staple strips

54b1-10 Machines for affixing separate staples, hinges, nails, rivets, hollow and double-point rivets, eyes, locks, lock latches and the like (71c-101/00; 71c-105/00; 7g-15/10; 3d-37/00)

### **54b2 Envelopes, letter cards, postcards, parcel addresses, labels, postal money orders, bank drafts, printed forms and tags**

Envelopes for letters

54b2-2/01 of common type

54b2-2/05 Window envelopes

54b2-2/10 Safety envelopes

54b2-2/18 Envelopes for open mail and printed matter

54b2-2/20 Letter paper with sealing arrangements, letter cards

54b2-2/30 Envelopes with opening devices

54b2-2/35 Multipurpose envelopes, with reply, return receipts; connected envelopes

54b2-2/40 Envelopes with several pockets

54b2-2/50 Closing devices for envelopes

54b2-2/60 Special envelope arrangements

Bags, pouches and sacks made of paper and the like, insofar as their production is concerned (as packaging material 81c-8, 81c-20 – 81c-22, 81c-26/02)

54b2-4/01 Bags and paper sacks of common type (sacks in general 81c-8)

54b2-4/10 Cone-shaped bags

- 54b2-4/15 Multi-walled and lined bags, and paper sacks
- 54b2-4/20 Valve sacks (filling and closing of sacks 81a-1, 81a-3/01, 81a-3/10)
- 54b2-4/25 Automatically opening bags
- 54b2-4/30 Bags with carrying devices
- 54b2-4/35 Bags with closing devices
- 54b2-4/40 Bags with several pockets
- 54b2-4/45 Pay envelopes and sample bags
- 54b2-4/50 Impregnated paper bags (impregnation of paper 55f-11/01)
- 54b2-5/01 Postcards in general
- 54b2-5/05 Typewriter postcards
- 54b2-5/10 Postcards containing several parts and postcards with removable parts
- 54b2-6/01 Parcel addresses, adhesive labels (labels for display purposes 54g-17; suitcase labels 33b-15/08; production of labels 15d-53, 15h-5/02, 54d-3/01)
- 54b2-6/05 Wrappers
- 54b2-7/01 Preprinted forms in general
- 54b2-7/05 Preprinted forms for bookkeeping
- 54b2-7/10 Financial papers, e.g. bank drafts, checks, tickets [for fares], cloakroom checks and the like
- 54b2-7/15 Periodicals
- 54b2-8/01 Machines for the manufacture of tags
- 54b2-8/02 Tags (cloth marking labels 8f-13/01, 8f-13/02; labels for display purposes and label holders 54g-17; suitcase tags 33b-15/08, 33d-8/03; affixing of address cards 81c-17; eyelet setting machines for general purposes 71c-60/01, 71c-101/00; attaching eyelets on clothing 3c-11/01, 3d-37/02)
- 54c      **Production of cylinders, spools and tubes by winding or rolling paper and cardboard** (making of wrappers and mouthpieces for cigarettes 79b)**
- 54c-1 Production of individual cylinders from paper and cardboard (for electrotechnical purposes 21c-18/01), winding mandrels, cutting devices for cylinder winding machines; impregnation and drying of paper cylinders
- 54c-2 Manufacture of single or multilayer helically wound paper tubes or cylinders; production of cylindrical paper tubes in the form of continuous longitudinal strips (21c-18/01)
- 54c-3 Manufacture of tubes with paper and cardboard bottoms (54a-5/02; 54b-3; 54f-2/15; 54f-2/30)
- 54c-4 Production of spools, conical paper tubes by winding (76d-17); machines for polishing the strip to be wound (machines for perforating tubes 54d-3)
- 54d      **Ornamenting paper and cardboard by means of rollers and press plates** (ornamenting on the papermaking machine and coloured ornamenting 55); **punching and perforating paper and cardboard** (longitudinal and transverse cutters 55e); **folding and paper web creping; application of adhesive on paper and cardboard; production of lace paper; preparation of paper and cardboard for wrapping purposes****
- 54d-1/01 Ornamenting, embossing paper, cardboard, and the like, by means of rollers (on paper machines 55d; calenders 55e, 8b; multicolour paper 55f-2, 55f-3; wallpaper printing 8c-4, 8c-7; box blanks 15d-55, 15d-56, 54a)
- 54d-1/02 Ornamenting and embossing paper, cardboard, and the like, by means of press plates
- 54d-2/01 Punching machines with fixed blades (for box blanks 54a-2/01, 54a-3/01; for sheet metal 7c-10; for leather 28b-11, 28b-22; longitudinal and transverse cutters 55e; paper stack cutting machines 11b)
- 54d-2/02 Punching blades

- 54d-2/03 Punching base plates, production of corner holders (11e-3), beer glass coasters (64a-86)
- 54d-2/04 Cut indicators, contact spacers, and other accessories for punches (7c)
- 54d-3/01 Perforation of paper, cardboard, and the like, by means of punches (7c-11; 7c-31; 15e-2; 28b-11; 28b-22; paper perforating machines for files 11e-8, 11e-9; perforating punches 15h-2; ruling devices 15f, 70e-11; production of musical-score cardboard 51e-4)
- 54d-3/02 Perforating paper by means of revolving tools
- 54d-3/03 Perforating paper by drilling devices
- 54d-4/01 Zigzag folding of lengths of paper, cardboard, or the like (15e-1; 54b-1; 54b-3; 54b-10; 70d-12)
- 54d-4/02 Paper creping
- 54d-4/03 Joining sheets of paper by means of corrugations or perforations (stitching 11a)
- 54d-4/04 Folding lampshades or similar objects (4b-1)
- 54d-5 Production of honeycombed paper, machines for the manufacture of garlands (garlands and manufacturing processes 3c-1, 3c-1/00)
- 54d-6/01 Application of adhesive on paper and cardboard by means of rollers (11c-3; 11c-5; 54a; 54b; 54c; 55c-2; 55f-1; 70d; 71c-30; 81b-3, 81b-5)
- 54d-6/02 Application of adhesive on paper and cardboard through openings in a container
- 54d-6/03 Application of adhesive to paper and cardboard by means of plates
- 54d-6/04 Machines to prevent coiling of gummed paper
- 54d-6/05 Drying of gummed paper
- 54d-6/06 Sheet delivery and unstacking for adhesive applying machines (general 15e, 54a-4)
- 54d-6/07 Edge reinforcing, including by rolling (55f)
- 54d-7 Production of lace paper and embroidery imitation from paper
- 54d-8 Fringe cutting and cutting out designs in paper and cardboard edges (55e; production of artificial flowers 3e-1)
- 54d-9/01 Production of wrapping material, except for corrugated cardboard, e.g. cellular paper, embossed paper (81c-20 – 81c-27)
- 54d-9/02 Production of dovetail-shaped wrapping material
- Production of corrugated cardboard
- 54d-9/03 with smooth covering sheet on one side
- 54d-9/04 with smooth covering sheet on both sides
- 54d-9/05 with special devices
- 54d-9/08 with laterally overlapping edges
- 54e Production of articles from paper pulp**
- 54e-1 Production of sheets, hoops, tubes, stoppers, spools, hollow and solid bodies by pressing fibre pulp between two moulds (80a-47; 39a-19; 39a7-3/00; 39b-22; 39b-26; 77f-12; 77f-3/02)
- 54e-2 Production of hollow shells from pulp water by delivering fibre layers sucked-up by sieve moulds into a couch mould
- 54e-3 Production of hollow objects from pulp water by placing fibre in or on sieve moulds, including pre-drying in the same sieve mould
- 54f Processes and devices for the production of miscellaneous articles from paper, cardboard, vulcanised fibre, etc., and the articles as such insofar as their manufacture is concerned**
- 54f-1/01 Paper and cardboard plates and dishes (34f-11/02; 34l)
- 54f-1/05 Machines for their production
- 54f-1/10 Corrugated paper vessels, paper bottleneck covers (30g-6/01; 34f-11/02; 34l; 57c-14/02; 64a-20/02; 64a-20/03; 64a-73)
- 54f-1/15 Machines for their production
- 54f-2/01 Paper barrels (barrels, general 81c-5)

54f-2/10	Paper cups (cups in general 64a-3, 34f-11/07)
54f-2/15	Machines for the production of paper cups
54f-2/25	Paper bottles, spherical vessels, pails and containers (34f-11/06; 34l; 64a-1/01)
54f-2/30	Machines for the production of paper bottles and containers
54f-3/01	Boxlike containers and cases (33b-12/02; 33b-12/15)
54f-3/05	Machines for the production of flypaper, (flypaper 45k-2/01, 45k-1/16; adhesive applying machines 54d-6/01 – 54d-6/03)
54f-3/10	Handles, grips, wheels, piston rings, walking sticks, stoppers (47b-20 – 47b-26; 47f-1; 33a-11; 64a-10; 87d-2)
54f-3/15	Figures, plaster, ornaments (34f-13; 34f-14; 75b-24; 75b-26; 77f-7; 77f-8)
54f-4/01	Thread balls, spools, cigar holders, scabbards, plates for the production of paper and cardboard buttons (spools, general 76d-17)
54f-4/05	Vulcanised fibre objects (for electrotechnical purposes 21c-2/13, 21c-2/20, 21c-2/21; chemical part 39b-15)
54f-4/10	Water, grease and heat-resistant paper receptacles (impregnation of paper 55f-11)
54f-5	Cardboard picture frames (34f-2)

## **54g Advertising and exhibiting (acoustical and optical advertising 54h)**

### **Advertising**

54g-1/01	Advertising pillars
54g-1/02	Advertisements displayed upon general-use commodities, advertisements displayed on articles used in restaurants
54g-1/03	Advertisements displayed upon smoking articles
54g-2/01	Public advertising devices
54g-2/02	Public advertising devices in connection with direction maps (station indicators 20i-25, 20i-27; signboards 54h-4)
54g-2/03	Public advertising devices with interchangeable letters (memorandum arrangements 70d-11/30)
54g-2/04	Calendar with advertising devices (11e-6; 42n-12)
54g-3/01	Table card holders with advertising devices
54g-3/02	Newspaper holders for displaying purposes (11e-4)
54g-3/03	Signboard frames for advertising devices (34f-2; 34f-3; 34f-4; 54h-5)
54g-4/01	Displaying of advertisements on boards in general
54g-4/02	Displaying of advertisements on revolving boards
54g-4/03	Displaying of advertisements on hinged leaves
54g-4/04	Displaying of advertisements on postcards, envelopes, and the like (54b)
54g-4/05	Displaying of advertisements on boards combined with clockworks (83a; 83b)
54g-4/06	Displaying of advertisements on boards by means of wind power (signboards moved by wind power 54h-4)
54g-5/01	Displaying of advertisements on mechanically driven advertising webs (34e-7; 34e-8; 34e-9; 34e-19; 54h)
54g-5/02	Displaying of advertisements on electrically driven advertising webs (54h)
54g-6/01	Displaying of advertisements on drums
54g-6/02	Displaying of advertisements on prisms
54g-6/03	Displaying of advertisements on Ferris wheels, endless conveyors, and the like
54g-7	Displaying of advertisements by means of toys, moving dolls, etc.

### **Advertising displays**

54g-8/01	Showcases with withdrawal devices without insertion of coins, general (34l)
54g-8/02	Showcases with withdrawal devices, especially for foodstuffs, without insertion of coins (automatic vending machines 43b; devices for mixing and distributing balls and slips in games of chance 43a-40)
54g-8/03	Special devices for showcases having withdrawal devices
54g-9	Advertising card dispensers with displaying devices

- 54g-10 Advertising paper dispensers with displaying devices
- 54g-11/01 Showcases, general
- 54g-11/02 Showcases with multiple and special devices
- 54g-11/03 Showcases with heating, ventilation, etc.
- 54g-11/04 Showcases with moving devices
- 54g-11/10 Glass joints, glass plate fasteners (34i-27)
- 54g-11/20 Show window equipment or store vending devices
- 54g-11/21 Movable show window equipment or store vending devices (35a-7; 54g-16/03; 77g-1; 77g-1/00; 81e-42 – 81e-44)
- 54g-11/22 With slides, mirrors, etc., and prevention of mirror reflection (77g-1; 77g-1/02)
- 54g-11/30 Display arrangements for sample cases (33b-7/01)
- 54g-11/40 Display boxes for a single article (81c)
- 54g-11/41 Display boxes for several articles
- 54g-11/42 Display boxes with several compartments
- 54g-11/50 Standing posters, for the display of articles (81c-20 – 81c-27, dummies 33b-11)
- 54g-11/60 Sample cards, sample books for display (cloth samples 8f-13/12)
- 54g-12 Display receptacles and stands for ornaments, watches, spectacles, lenses, teeth, etc. (33b-12)
- 54g-13/01 Fixed display stands in general; holding devices for exhibition purposes (for sale carts 37f-4)
- 54g-13/02 Revolving display stands
- 54g-13/03 Pivotal display stands
- 54g-13/04 Wire display stands
- 54g-13/05 Display stands for ties, stockings, suspenders
- 54g-13/06 Display stands for shoes
- 54g-13/07 Display stands for hats
- 54g-13/08 Display stands for canes and umbrellas
- 54g-13/09 Display stands for cigar boxes
- 54g-13/10 Display stand arms (34f-26)
- 54g-14/01 Adjustable and collapsible display stands (for sale carts 37f-4; illumination supports 4b)
- 54g-14/02 Adjustable display stands for furniture, mattresses, etc.
- 54g-14/03 Adjustable display stands with special equipment
- 54g-14/04 Display stands to be fastened to ceilings or walls
- 54g-14/05 Adjustable pillar display stands
- 54g-14/06 Display stands assembled from a plurality of elements
- 54g-15/01 Exhibition of pictures, carpets, wallpaper, etc. for displaying purposes (sample and colour disks and webs moved in window boards 54g-16/04)
- 54g-15/02 Pivoted frames for picture displaying
- 54g-15/03 Displaying carpets on reels or web reels for exhibition purposes
- 54g-16/01 Plastic display busts (77f-7 – 77f-12; 77f-3/00; 3d)
- 54g-16/02 Parts of display busts, e.g. single elements and element connections (8d-16/02; 3b-18; 30d-1 – 30d-3)
- 54g-16/03 Movable display busts, and rotatable supports for other articles of any desired shape (54g-11/21)
- 54g-16/04 Material display plates with figures, transparent plates with imprinted figures for displaying clothing materials and exhibiting cloth by means of revolving cloth sample disks and webs
- 54g-16/05 Displaying of clothing on hangers
- 54g-16/06 Displaying clothes on moving chains and worms for exhibition purposes
- 54g-17/01 Labels for displaying purposes, general (8f-13; 33d-8/03; 54b-8; 81c-17)
- 54g-17/02 Labels on bottles, cigar boxes
- 54g-17/03 Labels with sheet metal holders

- 54g-17/04 Labels with wire holders (11e-10; 11e-11)  
 54g-17/10 Labels of special structure, rails for holding labels, interchangeable figures (54b-8/02; 54h-5)  
 54g-17/20 Labels with suction cups (33c-24/07; 34f-3/05; 54h-5)

## **54h Mobile, acoustical, optical, and special optical advertising**

### **Mobile advertising**

#### Exhibiting of advertisements

- 54h-1/01 by sandwich men (41c-6; 41c-1/24)  
 54h-1/02 by vehicles or floating craft, by means of boards, drums and figures (54g-4; 54g-6; 54g-7) conveyors (54g-5; 54h-31), illumination (54h-3) by means of wheels, by jolting while in motion, by projection from vehicles (42h; 54h-4)  
 54h-1/03 in the air: by means of fireworks (78d); by means of captive kites and balloons (62a; 77f), by means of airships and airplanes (62a; 77f)

### **Acoustical advertising**

- 54h-1/04 by means of noises, signals and calls (74a; 74d; 77f); by means of phonographs with or without the showing of pictures (42g); by sound film (57a), by talking figures (77f), by radio (21a2-32; 21a2-38; 21a3-49; 21a4-26; 21a4-27)

### **Optical advertising**

- 54h-2/01 Light advertisements in general (4a; 4b; 4d; 21f; 75d-6; 75d-7)  
 54h-2/02 by means of transparent moving strips, moving letters (54g-5; 54h-2/04), by means of revolving disks; floor advertisements; advertising lamp shades and light screens with hot air drive (4a; 4b) transparent flashing light advertising (75d-2; 75d-4); displaying advertisements by means of transparent mirrors and reflectors (75d-3; 75d-4)  
 54h-2/03 Gas light advertising (4b; 4d)  
 54h-2/04 Electric light advertising; grouping and assembly of electric lamps, universal electrical structures (electric lamp structures, 21f, 54h-5); circuits, elements (21c-39 – 21c-42; 21c-52; 21c-53); flashboard advertising (21a4-25)

### **Special optical advertising**

- 54h-3/01 Advertising equipment to arouse attention by means of figures, optical illusion and imitation of natural processes (77f; 77g)  
 54h-3/02 Mechanical devices for advertisement writing (77f-26; 77f-33/22; 77f-33/24)  
 54h-3/03 Surprise advertisements on opening and closing of windows and doors, on use of commodities (54g; 74a; 74d), by means of screens and gratings (57a-5; 57b-18)  
 54h-3/04 Advertising painted on roadways  
 54h-3/05 Projection advertising devices with disk, drum or web-type picture supports with picture screen, for projection in the air and on clouds (42h, 57a; 77g; 83a)  
 54h-4 Advertising and business signs, street signs, house number signs, lamp signs, signboards with interchangeable plates, with variable characters, with movable and interchangeable letters, colour flap-boards, signboards with coloured liquids, daylight mirror advertising devices, reflector signs, signs moved by wind (54g-4/06; 88c-1 – 88c-3); lit up and lit through signs (20i-25/01 – 20i-27; 74d-8; number plates for motor vehicles 63c-84)  
 54h-5 Special structures of single letters and signs with regard to manufacture, affixing, assembly, weather resistance, light effect; fluorescent tubes, glow lamps (production of fluorescent tubes, and incandescent lamps 21f-31 – 21f-81; of glow lamps 21f-82 – 21f-87), luminescent fluorescent signs (4b-17), transparent letters and signs; stamped and punched letters and signs (32b; 75d-1 – 75d-4; motor car radiator figures 63c-72, 63c-84)