SECTION B — PERFORMING OPERATIONS; TRANSPORTING

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

B65G TRANSPORT OR STORAGE DEVICES, e.g. CONVEYORS FOR LOADING OR TIPPING, SHOP CONVEYOR SYSTEMS OR PNEUMATIC TUBE CONVEYORS (packaging B65B; handling thin or filamentary materials, e.g. paper sheets or thread, B65H; cranes B66C; portable or mobile lifting or hauling appliances, e.g. hoists, B66D; devices for lifting or lowering goods for loading or unloading purposes, e.g. fork-lift trucks, B66F 9/00; emptying bottles, jars, cans, casks, barrels or similar containers, not otherwise provided for, B67C 9/00; delivering or transferring liquids B67D; filling or discharging vessels for liquefied, solidified or compressed gases F17C; pipe-line systems for fluids F17D)

Note(s) [2014.01]

This subclass does not cover road or railway vehicles, waterborne vessels or aircraft per se, or their adaptation for transport purposes. This subject matter is covered by classes B60-B64, for example in the following places:

- *vehicles adapted for load transportation B60P;*
- *railway wagons adapted for load transportation B61D;*
- *hand carts B62B;*
- *superstructures for load-carrying vehicles B62D 33/00;*
- *loading or load-accommodating arrangements on ships or vessels B63B 25/00, B63B 27/00;*
- *equipment for handling freight in aircraft B64D 9/00.*

Subclass index

HANDLING AND STORAGE
- Loading and unloading 65/00, 67/00, 69/00
- Transfer, trans-shipment 63/00
- Storage 1/00, 3/00, 5/00
- Piling, unpiling
  - of articles 57/00-61/00
  - of loose material 65/28
- Assisting manual handling 7/00, 9/00

CONVEYORS, CHUTES
- Mechanical
  - with endless element 15/00-23/00
  - with particular movement 25/00, 27/00, 29/00, 33/00
  - other kinds 35/00
  - combinations or systems of general use 37/00, 49/00
  - chutes; roller-ways; projectors 11/00, 13/00, 31/00
- Parts or auxiliary devices applicable to different kinds
  - rollers; frames; auxiliary handling 39/00, 41/00, 47/00
  - control, safety; maintenance 43/00, 45/00
- Non-mechanical 51/00, 53/00, 54/00

Storing; Storage devices

1/00 Storing articles, individually or in orderly arrangement, in warehouses or magazines (conveyor combinations in warehouses, magazines or workshops B65G 37/00; stacking of articles B65G 57/00; removing articles from stacks B65G 59/00; loading machines B65G 65/02)

1/02 • Storage devices (furniture A47B; shop fittings A47F)

1/04 • • mechanical

1/06 • • • with means for presenting articles for removal at predetermined position or level (B65G 1/12 takes precedence) **[3]**

1/07 • • • • the upper article of a pile being always presented at the same predetermined level **[3]**

1/08 • • • • the articles being fed by gravity

1/10 • • • with relatively-movable racks to facilitate insertion or removal of articles

1/12 • • • with article supports or holders movable in a closed circuit to facilitate insertion or removal of articles

1/127 • • • • the circuit being confined in a vertical plane **[3]**

1/133 • • • • the circuit being confined in a horizontal plane **[3]**
1/137 • • • with arrangements or automatic control means for selecting which articles are to be removed **[4]**
1/14 • • Stack holders or separators
1/16 • Special arrangements of articles in storage spaces
1/18 • • Articles inclined so as to be mutually self-supporting
1/20 • • Articles arranged in layers with spaces between articles

3/00 Storing bulk material or loose, i.e. disorderly, articles (filling or emptying storage spaces or containers, spreading-out or piling-up bulk material or loose articles B65G 65/28, B65G 65/30, B65G 69/04)
3/02 • in the open air (B65G 3/04 takes precedence)
3/04 • in bunkers, hoppers or like large containers (such containers per se B65D 88/00)

5/00 Storing fluids in natural or artificial cavities or chambers in the earth

Devices assisting manual conveyance of articles over short distances, e.g. in storage depots, warehouses or factories

7/00 Devices for assisting manual moving or tilting heavy loads (roller-ways B65G 13/00; for tilting and emptying barrels or casks B65G 65/24)
7/02 • Devices adapted to be interposed between loads and the ground or floor, e.g. crowbars with means for assisting conveyance of loads
7/04 • • Rollers
7/06 • • using fluid at high pressure supplied from an independent source to provide a cushion between load and ground
7/08 • • for tilting the loads
7/10 • • for rolling cylindrical loads
7/12 • Load-carriers, e.g. hooks, slings, harness, gloves, modified for load-carrying

9/00 Apparatus for assisting manual handling having suspended load-carriers movable by hand or gravity

Chutes; Kinds or types of conveyors; Constructional features, details or auxiliary devices peculiar to conveyors of particular types [4]

11/00 Chutes (used as storage devices B65G 1/02)
11/02 • of straight form
11/04 • for mail in buildings
11/06 • of helical or spiral form
11/08 • with discontinuous guiding surfaces, e.g. arranged in zig-zag or cascade formation
11/10 • flexible
11/12 • pivotable
11/14 • extensible, e.g. telescopic
11/16 • Interior surfaces; Linings
11/18 • Supports or mountings
11/20 • Auxiliary devices, e.g. for deflecting, controlling speed of, or agitating, articles or solids

13/00 Roller-ways (storage devices comprising roller-ways B65G 1/02; endless-chain conveyors comprising load-supporting rollers B65G 17/00; rollers or arrangements thereof B65G 39/00)
13/02 • having driven rollers
13/04 • • all rollers driven
13/06 • • Roller driving means **[3]**
13/07 • • • having endless driving elements
13/071 • • • with frictional engagement
13/073 • • • comprising free-wheel gearing
13/075 • Braking means **[3]**
13/08 • of curved form; with branch-offs
13/10 • • Switching arrangements
13/11 • Roller frames
13/12 • • adjustable

15/00 Conveyors having endless load-conveying surfaces, i.e. belts and like continuous members, to which tractive effort is transmitted by means other than endless driving elements of similar configuration (having load-conveying surfaces formed by interconnected longitudinal links B65G 17/06)
15/02 • for conveying in a circular arc
15/04 • the load being carried on the lower run of the endless surface
15/06 • with oppositely-moving parts of the endless surface located in the same plane and parallel to one another
15/08 • the load-carrying surface being formed by a concave or tubular belt, e.g. a belt forming a trough
15/10 • comprising two or more co-operating endless surfaces with parallel longitudinal axes, or a multiplicity of parallel elements, e.g. ropes defining an endless surface
15/12 • • with two or more endless belts
15/14 • • • the load being conveyed between the belts
15/16 • • • • between an auxiliary belt and a main belt
15/18 • • • the belts being sealed at their edges
15/20 • • • arranged side by side, e.g. for conveyance of flat articles in vertical position
15/22 • comprising a series of co-operating units
15/24 • • in tandem
15/26 • • extensible, e.g. telescopic
15/28 • Conveyors with a load-conveying surface formed by a single flat belt, not otherwise provided for
15/30 • Belts or like endless load-carriers (co-operating with rails or the like B65G 21/22; with rollers B65G 39/20)
15/32 • • made of rubber or plastics
15/34 • • • with reinforcing layers, e.g. of fabric
15/36 • • • • the layers incorporating ropes, chains, or rolled steel sections
15/38 • • • with flame-resistant layers, e.g. of asbestos, glass
15/40 • • • troughed or tubular; formed with joints facilitating troughing
15/42 • • • having ribs, ridges, or other surface projections
15/44 • • • • for impelling the loads
15/46 • • • formed with guides
15/48 • • metallic
15/50 • • Endless load-carriers consisting of a series of parallel ropes or belt strips
15/52 • • • interconnected by transverse slats
15/54 • • Endless load-carriers made of interwoven ropes or wires
15/56 • • with edge-protecting or reinforcing means
15/58 • • with means for holding or retaining the loads in fixed position, e.g. magnetic
15/60 • Arrangements for supporting or guiding belts, e.g. by fluid jets
15/62 • • Guides for sliding belts

15/64 • • for automatically maintaining the position of the belts

17/00 Conveyors having an endless traction element, e.g. a chain, transmitting movement to a continuous or substantially-continuous load-carrying surface or to a series of individual load-carriers; Endless-chain conveyors in which the chains form the load-carrying surface

17/02 • comprising a load-carrying belt attached to, or resting on, the traction element
17/04 • • the belt having loops forming load-receiving pockets
17/06 • having a load-carrying surface formed by a series of interconnected, e.g. longitudinal, links, plates, or platforms
17/08 • • the surface being formed by the traction element
17/10 • • the surface forming a longitudinal trough
17/12 • comprising a series of individual load-carriers fixed, or normally fixed, relative to traction element
17/14 • • with two spaced connections to traction element
17/16 • comprising individual load-carriers which are pivotally mounted, e.g. for free-swinging movement (guides inverting or tilting load-carriers for emptying B65G 47/34)
17/18 • • and move in contact with a guiding surface
17/20 • comprising load-carriers suspended from overhead traction chains
17/22 • with oppositely-moving parts of the conveyor located in a common plane
17/24 • comprising a series of rollers which are moved over a supporting surface by the traction element to effect conveyance of loads or load-carriers
17/26 • comprising a series of co-operating units, e.g. interconnected by pivots
17/28 • • extensible, e.g. telescopic
17/30 • Details; Auxiliary devices (belts B65G 15/30; framework B65G 21/00)
17/32 • • Individual load-carriers
17/34 • • • having flat surfaces, e.g. platforms, grids, forks
17/36 • • • having concave surfaces, e.g. buckets
17/38 • • Chains or like traction elements (drive chains F16G 13/00); Connections between traction elements and load-carriers
17/40 • • • Chains acting as load-carriers
17/42 • • • Attaching load-carriers to traction elements
17/44 • • • • by means excluding relative movements
17/46 • • Means for holding or retaining the loads in fixed position on the load-carriers, e.g. magnetic
17/48 • • Controlling attitudes of load-carriers during movement (guides B65G 21/20; inverting or tilting load-carriers to discharge contents B65G 47/38)

19/00 Conveyors comprising an impeller or a series of impellers carried by an endless traction element and arranged to move articles or materials over a supporting surface or underlying material, e.g. endless scraper conveyors

19/02 • for articles, e.g. for containers
19/04 • for moving bulk material in open troughs or channels
19/06 • • the impellers being scrapers similar in size and shape to the cross-section of the trough or channel
19/08 • • • and attached to a single belt, rope, or chain
19/10 • • • and attached to a pair of belts, ropes, or chains
19/12 • • the impellers being plates having an area substantially smaller than that of the trough or channel cross-section
19/14 • for moving bulk material in closed conduits, e.g. tubes
19/16 • • the impellers being elements having an area substantially smaller than that of the conduit cross-section
19/18 • Details
19/20 • • Traction chains, ropes, or cables
19/22 • • Impellers, e.g. push-plates, scrapers; Guiding means therefor
19/24 • • • Attachment of impellers to traction element
19/26 • • • • pivotal
19/28 • • Troughs, channels, or conduits
19/30 • • • with supporting surface modified to facilitate movement of loads, e.g. friction-reducing devices

21/00 Supporting or protective framework or housings for endless load-carriers or traction elements of belt or chain conveyors

21/02 • consisting essentially of struts, ties, or like structural elements
21/04 • • the ties being formed by longitudinal cables or ropes
21/06 • • constructed to facilitate rapid assembly or dismantling
21/08 • Protective roofs or arch supports therefor
21/10 • movable, or having interchangeable or relatively-movable parts; Devices for moving framework or parts thereof
21/12 • • to allow adjustment of position of load-carrier or traction element as a whole
21/14 • • to allow adjustment of length or configuration of load-carrier or traction element (tensioning arrangements for belt or chain B65G 23/44)
21/16 • for conveyors having endless load-carriers movable in curved paths
21/18 • • in three-dimensionally curved paths
21/20 • Means incorporated in, or attached to, framework or housings for guiding load-carriers, traction elements or loads supported on moving surfaces (arrangements for supporting belts B65G 15/60; rollers or roller arrangements B65G 39/00)
21/22 • • Rails or the like engaging sliding elements or rollers attached to load-carriers or traction elements

23/00 Driving gear for endless conveyors; Belt- or chain-tensioning arrangements

23/02 • Belt- or chain-engaging elements
23/04 • • Drums, rollers, or wheels
23/06 • • • with projections engaging abutments on belts or chains, e.g. sprocket wheels
23/08 • • • with self-contained driving mechanisms, e.g. motors and associated gearing
23/10 • • • arranged intermediate the ends of the conveyors
23/12 • • • Arrangements of co-operating drums or rollers to augment tractive effort applied to the belts
23/14 • • Endless driving elements extending parallel to belt or chain
23/16 • • • with dogs engaging abutments on belts or chains
23/18 • • Suction or magnetic elements
23/19 • • • Suction elements **[3]**
23/20 • • Screws

23/22 • Arrangements or mountings of driving motors
23/23 • • of electric linear motors **[3]**
23/24 • Gearing between driving motor and belt- or chain-engaging elements (contained in drums, rollers, or wheels B65G 23/08)
23/26 • • Applications of clutches or brakes
23/28 • • Arrangements for equalising the drive to several elements
23/30 • • Variable-speed gearing
23/32 • for effecting drive at two or more points spaced along the length of the conveyors
23/34 • • comprising a single motor coupled to spaced driving elements
23/36 • • comprising two or more driving motors each coupled to a separate driving element, e.g. at either end of the conveyors
23/38 • for effecting intermittent movement of belts or chains
23/40 • • Applications of pawl-and-ratchet mechanisms or Geneva wheels
23/42 • • Reciprocating members engaging successive abutments on belts or chains
23/44 • Belt- or chain-tensioning arrangements

25/00 Conveyors comprising a cyclically-moving, e.g. reciprocating, carrier or impeller which is disengaged from the load during the return part of its movement (jigging B65G 27/00)
25/02 • the carrier or impeller having different forward and return paths of movement, e.g. walking-beam conveyors
25/04 • the carrier or impeller having identical forward and return paths of movement, e.g. reciprocating conveyors
25/06 • • having carriers, e.g. belts
25/08 • • having impellers, e.g. pushers
25/10 • • • with impeller pivotally mounted on a reciprocating bar
25/12 • • • with impeller fixed to a reciprocating bar and the bar being rotated about its longitudinal axis on its return stroke

27/00 Jigging conveyors
27/02 • comprising helical or spiral channels or conduits for elevation of materials
27/04 • Load-carriers other than helical or spiral channels or conduits
27/06 • • Joints connecting load-carrier sections
27/08 • Supports or mountings for load-carriers, e.g. framework, bases, spring arrangements
27/10 • Applications of devices for generating or transmitting jigging movements
27/12 • • of shaking devices, i.e. devices for producing movements of low frequency and large amplitude
27/14 • • • hydraulic
27/16 • • of vibrators, i.e. devices for producing movements of high frequency and small amplitude
27/18 • • • Mechanical devices
27/20 • • • • rotating unbalanced masses
27/22 • • • Hydraulic or pneumatic devices
27/24 • • • Electromagnetic devices
27/26 • • • with elastic coupling between vibrator and load-carrier
27/28 • • with provision for dynamic balancing
27/30 • • • by means of an oppositely-moving mass, e.g. a second conveyor
27/32 • • with means for controlling direction, frequency, or amplitude of vibration or shaking movement
27/34 • comprising a series of co-operating units

29/00 Rotary conveyors, e.g. rotating discs, arms, star-wheels or cones (mechanical projectors B65G 31/00; screw or rotary spiral conveyors B65G 33/00)
29/02 • for inclined or vertical transit

31/00 Mechanical throwing machines for articles or solid materials
31/02 • comprising belts
31/04 • comprising discs, drums, or like rotary impellers

33/00 Screw or rotary spiral conveyors
33/02 • for articles
33/04 • • conveyed between a single screw and guiding means
33/06 • • conveyed and guided by parallel screws
33/08 • for fluent solid materials
33/10 • • with non-enclosed screws
33/12 • • with screws formed by straight tubes or drums having internal threads, or by spiral or helical tubes
33/14 • • comprising a screw or screws enclosed in a tubular housing
33/16 • • • with flexible screws operating in flexible tubes
33/18 • • • with multiple screws in parallel arrangements
33/20 • • • the housing being rotatable relative to the screw
33/22 • • • with means for retarding material flow at the delivery end of the housing
33/24 • Details
33/26 • • Screws
33/30 • • • with a discontinuous helical surface
33/32 • • Adaptations of bearings or couplings for supporting or connecting screws (B65G 33/16 takes precedence)
33/34 • • Applications of driving gear
33/36 • • • for rotating housing and screw at different speeds
33/38 • • • for effecting simultaneous rotation and reciprocation of screw

35/00 Mechanical conveyors not otherwise provided for
35/02 • comprising an endless traction element, e.g. a belt, arranged to roll cylindrical articles over a supporting surface
35/04 • comprising a flexible load-carrier, e.g. a belt, which is wound-up at one end and paid-out at the other (reciprocating belt conveyors B65G 25/06)
35/06 • comprising a load-carrier moving along a path, e.g. a closed path, and adapted to be engaged by any one of a series of traction elements spaced along the path (effecting drive at two or more points spaced along the length of an endless conveyor B65G 23/32)
35/08 • comprising trains of unconnected load-carriers, e.g. belt sections, movable in a path, e.g. a closed path, adapted to contact each other and to be propelled by means arranged to engage each load-carrier in turn

37/00 Combinations of mechanical conveyors of the same kind, or of different kinds, of interest apart from their application in particular machines or use in particular manufacturing processes (series of co-operating belt conveyor units B65G 15/22; series of co-operating chain conveyor units B65G 17/26; sequence control of combined conveyors B65G 43/10)
37/02 • Flow sheets for conveyor combinations in warehouses, magazines or workshops

Common features or details of, or auxiliary devices applicable to, conveyors of different kinds or types; Feeding or discharging devices incorporated in, or operatively associated with, conveyors

39/00 Rollers, e.g. drive rollers, or arrangements thereof incorporated in roller-ways or other types of mechanical conveyors (driving gear for rollers of roller-ways B65G 13/06)
39/02 • Adaptations of individual rollers and supports therefor
39/04 • • the rollers comprising a number of roller- forming elements mounted on a single axle
39/06 • • the roller sleeves being shock-absorbing, e.g. formed by helically-wound wires
39/07 • • Other adaptations of sleeves
39/071 • • • for aligning belts or sheets
39/073 • • • for cleaning belts
39/08 • • the rollers being magnetic
39/09 • • Arrangements of bearing or sealing means
39/10 • Arrangements of rollers (on a single axle B65G 39/04)
39/12 • • mounted on framework
39/14 • • • Spring-supported sets, e.g. permitting troughing of a load-carrying belt
39/16 • • • for aligning belts or chains
39/18 • • • for guiding loads
39/20 • • attached to moving belts or chains

41/00 Supporting frames or bases for conveyors as a whole, e.g. transportable conveyor frames
41/02 • Frames mounted on wheels for movement on rail tracks

43/00 Control devices, e.g. for safety, warning or fault-correcting
43/02 • detecting dangerous physical condition of load-carriers, e.g. for interrupting the drive in the event of overheating
43/04 • detecting slip between driving element and load-carrier, e.g. for interrupting the drive
43/06 • interrupting the drive in case of driving-element breakage; Braking or stopping loose load-carriers
43/08 • Control devices operated by article or material being fed, conveyed, or discharged
43/10 • Sequence control of conveyors operating in combination

45/00 Lubricating, cleaning, or clearing devices
45/02 • Lubricating devices
45/04 • • for rollers **[5]**
45/06 • • • forming belt troughing structure **[5]**
45/08 • • for chains **[5]**
45/10 • Cleaning devices (adaptations of roller sleeves for cleaning belts B65G 39/073) **[5]**
45/12 • • comprising scrapers **[5]**
45/14 • • • Moving scrapers **[5]**
45/16 • • • with scraper biasing means **[5]**
45/18 • • comprising brushes **[5]**
45/20 • • comprising screws **[5]**
45/22 • • comprising fluid applying means **[5]**
45/24 • • comprising plural diverse cleaning devices **[5]**
45/26 • • for gathering residue after cleaning **[5]**

47/00 Article or material-handling devices associated with conveyors; Methods employing such devices
47/02 • Devices for feeding articles or materials to conveyors
47/04 • • for feeding articles
47/06 • • • from a single group of articles arranged in orderly pattern, e.g. workpieces in magazines (de-stacking devices B65G 59/00)
47/08 • • • • spacing or grouping the articles during feeding (during transit by conveyor B65G 47/28)
47/10 • • • from several groups of articles
47/12 • • • from disorderly-arranged article piles or from loose assemblages of articles
47/14 • • • • arranging or orientating the articles by mechanical or pneumatic means during feeding (during transit by conveyor B65G 47/24, B65G 47/26)
47/16 • • for feeding materials in bulk
47/18 • • • Arrangements or applications of hoppers or chutes
47/19 • • • • having means for controlling material flow, e.g. to prevent overloading
47/20 • • • • the hoppers or chutes being movable
47/22 • Devices influencing the relative position or the attitude of articles during transit by conveyors (during feeding B65G 47/14)
47/24 • • orientating the articles
47/244 • • • by turning them about an axis substantially perpendicular to the conveying plane **[5]**
47/248 • • • by turning over or inverting them (B65G 47/244 takes precedence) **[5]**
47/252 • • • • about an axis substantially perpendicular to the conveying direction **[5]**
47/256 • • • removing incorrectly orientated articles **[5]**
47/26 • • arranging the articles, e.g. varying spacing between individual articles
47/28 • • • during transit by a single conveyor
47/29 • • • • by temporarily stopping movement
47/30 • • • during transit by a series of conveyors
47/31 • • • • by varying the relative speeds of the conveyors forming the series
47/32 • • • • Applications of transfer devices
47/34 • Devices for discharging articles or materials from conveyors (B65G 47/256 takes precedence)
47/36 • • by detaching suspended articles
47/38 • • by dumping, tripping, or releasing load-carriers
47/40 • • • by tilting conveyor buckets
47/42 • • operated by article or material being conveyed and discharged
47/44 • • Arrangements or applications of hoppers or chutes
47/46 • • with distribution, e.g. automatically, to desired points (in tube mail systems B65G 51/36)
47/48 • • • according to bodily destination marks on either articles or load-carriers
47/49 • • • • without bodily contact between article or load-carrier and automatic control device
47/50 • • • according to destination signals stored in separate systems
47/51 • • • according to unprogrammed signals, e.g. influenced by supply situation at destination
47/52 • Devices for transferring articles or materials between conveyors, i.e. discharging or feeding devices (loading or unloading by means not incorporated in, or not operatively associated with, conveyors B65G 65/00; transfer of workpieces during metal rolling B21B 41/00)
47/53 • • between conveyors which cross one another **[3]**
47/54 • • • at least one of which is a roller-way **[3]**
47/56 • • to or from inclined or vertical conveyor sections

47/57 • • • for articles
47/58 • • • for materials in bulk
47/60 • • to or from conveyors of the suspended, e.g. trolley, type
47/61 • • • for articles
47/62 • • • for materials in bulk
47/64 • • Switching conveyors
47/66 • • Fixed platforms or combs, e.g. bridges between conveyors
47/68 • • adapted to receive articles arriving in one layer from one conveyor and to transfer them in individual layers to more than one conveyor, or vice versa, e.g. combining the flows of articles conveyed by more than one conveyor
47/69 • • • the articles being accumulated temporarily
47/70 • • • with precedence controls among incoming article flows
47/71 • • • the articles being discharged to several conveyors
47/72 • • transferring materials in bulk from one conveyor to several conveyors or vice versa
47/74 • Feeding, transfer, or discharging devices of particular kinds or types
47/76 • • Fixed or adjustable ploughs or transverse scrapers
47/78 • • Troughs having discharge openings and closures
47/80 • • Turntables carrying articles or materials to be transferred, e.g. combined with ploughs or scrapers
47/82 • • Rotary or reciprocating members for direct action on articles or materials, e.g. pushers, rakes, shovels
47/84 • • Star-shaped wheels or devices having endless travelling belts or chains, the wheels or devices being equipped with article-engaging elements
47/86 • • • the article-engaging elements being grippers
47/88 • • Separating or stopping elements, e.g. fingers (attached to star-shaped wheels B65G 47/84)
47/90 • • Devices for picking-up and depositing articles or materials
47/91 • • • incorporating pneumatic, e.g. suction, grippers
47/92 • • • incorporating electrostatic or magnetic grippers
47/94 • • Devices for flexing or tilting travelling structures; Throw-off carriages
47/95 • • • adapted for longitudinal delivery
47/96 • • • Devices for tilting links or platforms

49/00 Conveying systems characterised by their application for specified purposes not otherwise provided for
49/02 • for conveying workpieces through baths of liquid
49/04 • • the workpieces being immersed and withdrawn by movement in a vertical direction
49/05 • for fragile or damageable materials or articles **[4]**
49/06 • • for fragile sheets, e.g. glass **[4]**
49/07 • • for semiconductor wafers **[5, 2006.01]**
49/08 • • for ceramic mouldings **[4]**

Non-mechanical conveying through pipes or tubes; Floating in troughs

51/00 Conveying articles through pipes or tubes by fluid flow or pressure; Conveying articles over a flat surface, e.g. the base of a trough, by jets located in the surface
51/01 • Hydraulic transport of articles (B65G 51/04 takes precedence) **[6]**
51/02 • Directly conveying the articles, e.g. slips, sheets, stockings, containers or workpieces, by flowing gases
51/03 • • over a flat surface or in troughs **[4]**
51/04 • Conveying the articles in carriers having a cross-section approximating that of the pipe or tube; Tube mail systems
51/06 • • Despatch carriers for tube mail
51/08 • • Controlling or conditioning the operating medium
51/10 • • • at section junctions of pneumatic systems
51/12 • • • • Pneumatic gates
51/14 • • • • Pneumatic sluices
51/16 • • • varying, e.g. starting or stopping, gas pressure or flow
51/18 • • Adaptations of pipes or tubes; Pipe or tube joints
51/20 • • Braking arrangements
51/22 • • Arrangements for stopping the carriers en route in order to control carrier sequence; Blocking or separating devices
51/24 • • Switches
51/26 • • Stations
51/28 • • • for despatch
51/30 • • • for delivery
51/32 • • • for despatch, delivery, and transit
51/34 • • Two-way operation
51/36 • • Other devices for indicating or controlling movements of carriers, e.g. for supervising individual tube sections, for counting carriers, for reporting jams or other operating difficulties
51/38 • • • Contact devices on interior of tubes for detecting passage of carriers
51/40 • • • Automatically distributing the carriers to desired stations
51/42 • • • • according to indications on carriers
51/44 • • • • • without mechanical contact between carriers and controllers
51/46 • • • • according to separate signal systems

53/00 Conveying materials in bulk through troughs, pipes or tubes by floating the materials or by flow of gas, liquid or foam
53/02 • Floating material troughs
53/04 • Conveying materials in bulk pneumatically through pipes or tubes; Air slides
53/06 • • Gas pressure systems operating without fluidisation of the materials
53/08 • • • with mechanical injection of the materials, e.g. by screw
53/10 • • • with pneumatic injection of the materials by the propelling gas
53/12 • • • • the gas flow acting directly on the materials in a reservoir
53/14 • • • • the gas flow inducing feed of the materials by suction effect
53/16 • • Gas pressure systems operating with fluidisation of the materials
53/18 • • • through a porous wall
53/20 • • • • of an air slide, e.g. a trough
53/22 • • • • the systems comprising a reservoir, e.g. a bunker
53/24 • • Gas suction systems
53/26 • • • operating with fluidisation of the materials
53/28 • • Systems utilising a combination of gas pressure and suction (inducing feed of the materials by suction in gas pressure systems B65G 53/14)

53/30 • Conveying materials in bulk through pipes or tubes by liquid pressure
53/32 • Conveying concrete, e.g. for distributing same at building sites (mixing concrete on or by conveyors B28C 5/34)
53/34 • Details
53/36 • • Arrangements of containers
53/38 • • Modification of material containing walls to facilitate fluidisation
53/40 • • Feeding or discharging devices
53/42 • • • Nozzles
53/44 • • • Endless conveyors
53/46 • • • Gates or sluices, e.g. rotary wheels
53/48 • • • Screws or like rotary conveyors
53/50 • • • Pneumatic devices (incorporated in nozzles B65G 53/42)
53/52 • • Adaptations of pipes or tubes
53/54 • • • Flexible pipes or tubes
53/56 • • • Switches
53/58 • • Devices for accelerating or decelerating flow of the materials; Use of pressure generators (controlling pressure of propelling gas B65G 53/66)
53/60 • • Devices for separating the materials from propellant gas
53/62 • • • using liquid
53/64 • • • in discrete amounts
53/66 • • Use of indicator or control devices, e.g. for controlling gas pressure, for controlling proportions of material and gas, for indicating or preventing jamming of material

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54/00 Non-mechanical conveyors not otherwise provided for [3]
54/02 • electrostatic, electric, or magnetic **[3]**

Stacking or de-stacking; Loading or unloading

Note(s)

In groups B65G 57/00-B65G 61/00, the following term is used with the meaning indicated:

- "stacking" means disposing articles individually or in layers one above each other.

57/00 Stacking of articles (B65G 60/00 takes precedence; feeding, piling or stacking sheets B65H)
57/02 • by adding to the top of the stack
57/03 • • from above
57/04 • • • by suction or magnetic devices
57/06 • • • Gates for releasing articles
57/08 • • articles being tilted or inverted prior to depositing
57/081 • • • alternate articles being inverted
57/09 • • from alongside
57/10 • • • by devices, e.g. reciprocating, acting directly on articles for horizontal transport to the top of stack
57/11 • • the articles being stacked by direct action of the feeding conveyor
57/112 • • • the conveyor being adjustable in height
57/14 • • • the articles being transferred from carriers moving in an endless path adjacent to the stacks
57/16 • • Stacking of articles of particular shape
57/18 • • • elongated, e.g. sticks, rods, bars
57/20 • • • three-dimensional, e.g. cubiform, cylindrical
57/22 • • • • in layers, each of predetermined arrangement
57/24 • • • • • the layers being transferred as a whole, e.g. on pallets
57/26 • • • • • the arrangement providing for spaces between the articles
57/28 • by assembling the articles and tilting the assembled articles to a stacked position
57/30 • by adding to the bottom of the stack
57/32 • characterised by stacking during transit

59/00 De-stacking of articles (B65G 60/00 takes precedence)
59/02 • De-stacking from the top of the stack
59/04 • • by suction or magnetic devices
59/06 • De-stacking from the bottom of the stack
59/08 • De-stacking after preliminary tilting of the stack
59/10 • De-stacking nested articles
59/12 • characterised by de-stacking during transit

60/00 Simultaneously or alternatively stacking and de-stacking of articles

61/00 Use of pick-up or transfer devices or of manipulators for stacking or de-stacking articles not otherwise provided for

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63/00 Transferring or trans-shipping at storage areas, railway yards or harbours; Marshalling yard installations
63/02 • with essentially-horizontal transit otherwise than by bridge
63/04 • with essentially-horizontal transit by bridges equipped with conveyors
63/06 • with essentially-vertical transit

65/00 Loading or unloading (of vehicles B65G 67/00)
65/02 • Loading or unloading machines comprising essentially a conveyor for moving the loads associated with a device for picking-up the loads
65/04 • • with pick-up shovels (construction of shovels E02F)
65/06 • • with endless scraping or elevating pick-up conveyors
65/08 • • with reciprocating pick-up conveyors
65/10 • • • Raking or scraping devices
65/12 • • • • operations at positions off-set from the conveyor centreline
65/14 • • with jigging pick-up conveyors, e.g. duck-bills
65/16 • • with rotary pick-up conveyors
65/18 • • • Discs
65/20 • • • Paddle wheels
65/22 • • • Screws
65/23 • Devices for tilting and emptying of containers **[3]**
65/24 • • for manual tilting of barrels or casks **[3]**
65/28 • Piling or unpiling loose materials in bulk, e.g. coal, manure, timber, not otherwise provided for (by soil-shifting or like equipment E02F)

65/30 • Methods or devices for filling or emptying bunkers, hoppers, tanks, or like containers, of interest apart from their use in particular chemical or physical processes or their application in particular machines, e.g. not covered by a single other subclass (devices for tilting and emptying containers B65G 65/23; such containers having means facilitating filling or emptying B65D 88/54) **[3]**

Note(s)

Methods or devices for filling bunkers, hoppers, or containers are only classified in group B65G 65/30 if they are of general application apart from their use in particular processes or their application in particular machines or if they are not covered by a single other subclass.

65/32 • • Filling devices
65/34 • • Emptying devices (conveyor construction B65G 15/00-B65G 35/00; devices similar to vehicle tipplers B65G 67/48)
65/36 • • • Devices for emptying from the top
65/38 • • • • Mechanical devices
65/40 • • • Devices for emptying otherwise than from the top
65/42 • • • • using belt or chain conveyors
65/44 • • • • using reciprocating conveyors, e.g. jigging conveyors
65/46 • • • • using screw conveyors
65/48 • • • • using other rotating means, e.g. rotating pressure sluices in pneumatic systems

67/00 **Loading or unloading vehicles** (by means incorporated in the vehicles B60-B64, e.g. B60P 1/00, B61D 9/00, B63B 27/00, B64D 9/00; ground or aircraft-carrier-deck installations for aircraft B64F 1/32)

67/02 • Loading or unloading land vehicles
67/04 • • Loading land vehicles
67/06 • • • Feeding articles or materials from bunkers or funnels
67/08 • • • using endless conveyors
67/10 • • • using conveyors covering the whole length of vehicle trains
67/12 • • • Loading elongated articles, e.g. rails, logs
67/14 • • • Loading hardened bricks, briquettes, or the like
67/16 • • • Loading coke-oven products (discharging coke ovens C10B 33/00)
67/18 • • • Refuelling locomotives with solid fuels
67/20 • • • Loading covered vehicles
67/22 • • • Loading moving vehicles
67/24 • • Unloading land vehicles
67/26 • • • using rakes or scrapers
67/28 • • • • External transverse blades attached to endless conveyors
67/30 • • • using transportable tipping apparatus
67/32 • • • using fixed tipping installations
67/34 • • • • Apparatus for tipping wagons or mine cars (inverting wagons B65G 67/48)
67/36 • • • • • endwise
67/38 • • • • • • comprising a turntable
67/40 • • • • • • toward one end only
67/42 • • • • • sideways
67/44 • • • • • • by passing the vehicles over a stretch of transversely-inclined rails
67/46 • • • • • Apparatus for lifting and tilting
67/48 • • • • Vehicle tipplers
67/50 • • • • • Rotary vehicle tipplers, i.e. rotating through 360°
67/52 • • • • • • having several decks
67/54 • • • • • Vehicle-locking means
67/56 • • • • • Vehicle and tippler interlocking controls
67/60 • Loading or unloading ships (arrangement of ship-based loading or unloading equipment for cargo or passengers B63B 27/00) **[3]**
67/62 • • using devices influenced by the tide or by the movements of the ship, e.g. devices on pontoons **[3]**

69/00 **Auxiliary measures taken, or devices used, in connection with loading or unloading** (by means incorporated in, or operatively associated with, conveyors B65G 47/00; preventing fire A62C 3/00; in vehicles, see the relevant subclasses, e.g. B60P 1/58, B61D 7/32, B62D 33/00, B63B 25/00, B64D 9/00)

69/02 • Filling storage spaces as completely as possible, e.g. application of vibrators
69/04 • Spreading-out the materials conveyed over the whole surface to be loaded; Trimming heaps of loose materials
69/06 • Fluidising
69/08 • Devices for emptying storage spaces as completely as possible (devices preventing the formation of bridges in large containers B65D 88/64)
69/10 • Obtaining an average product from stored bulk material
69/12 • Sieving bulk materials during loading or unloading
69/14 • Pulverising loaded or unloaded materials
69/16 • Preventing pulverisation, deformation, breakage, or other mechanical damage to the goods or materials
69/18 • Preventing escape of dust
69/20 • Auxiliary treatments, e.g. aerating, heating, humidifying, de-aerating, cooling, de-watering, or drying, during loading or unloading; Loading or unloading in a fluid medium other than air
69/22 • Horizontal loading or unloading platforms (as road or railway equipment B61B 1/00, E01F 1/00)
69/24 • • having platform-level adjusting means
69/26 • • Rotatable platforms
69/28 • Loading ramps; Loading docks (as road or railway equipment B61B 1/00, E01F 1/00) **[1, 2006.01]**
69/30 • • Non-permanently installed loading ramps, e.g. transportable **[2006.01]**
69/32 • • Shelters, surrounds or sealing arrangements for loading docks **[2006.01]**
69/34 • • Accessories, e.g. vehicle restrainers, wheel blockers, positioners or bumpers **[2006.01]**