SECTION B — PERFORMING OPERATIONS; TRANSPORTING

B25 HAND TOOLS; PORTABLE POWER-DRIVEN TOOLS; HANDLES FOR HAND IMPLEMENTS; WORKSHOP EQUIPMENT; MANIPULATORS

B25J **MANIPULATORS; CHAMBERS PROVIDED WITH MANIPULATION DEVICES** (robotic devices for individually picking fruits, vegetables, hops or the like A01D 46/30; needle manipulators for surgery A61B 17/062; manipulators associated with rolling mills B21B 39/20; manipulators associated with forging machines B21J 13/10; means for holding wheels or parts thereof B60B 30/00; cranes B66C; arrangements for handling fuel or other materials which are used within nuclear reactors G21C 19/00; structural combination of manipulators with cells or rooms shielded against radiation G21F 7/06) **[5]**

Note(s)

In this subclass, the following term is used with the meaning indicated:

- "manipulator" covers handling tools, devices, or machines having a gripping or work head capable of bodily movement in space and of change of orientation, such bodily movement and change of orientation being controlled by means remote from the head, e.g. programme-controlled industrial robots.

Subclass index

KINDS OR TYPES OF MANIPULATORS.....1/00, 3/00
MANIPULATORS MOUNTED ON WHEELS OR VEHICLES.....5/00
MICROMANIPULATORS.....7/00
PROGRAMME-CONTROLLED MANIPULATORS.....9/00
OTHER MANIPULATORS, GLOVE-BOXES.....11/00, 21/00
CONTROL.....13/00
GRIPPING HEADS, JOINTS, ARMS.....15/00, 17/00, 18/00
ACCESSORIES; SAFETY.....19/00

1/00 **Manipulators positioned in space by hand** (of master-slave type B25J 3/00; micromanipulators B25J 7/00)
1/02 • articulated or flexible
1/04 • rigid, e.g. shelf-reachers
1/06 • of the lazy-tongs type
1/08 • movably mounted in a wall
1/10 • • Sleeve and pivot mountings therefor
1/12 • having means for attachment to a support stand

3/00 **Manipulators of master-slave type, i.e. both controlling unit and controlled unit perform corresponding spatial movements**
3/02 • involving a parallelogram coupling of the master and slave units (pantographic instruments B43L 13/00)
3/04 • involving servo mechanisms (servo-actuated heads B25J 15/02)

5/00 **Manipulators mounted on wheels or on carriages** (B25J 1/00 takes precedence; programme-controlled manipulators B25J 9/00)
5/02 • travelling along a guideway
5/04 • • wherein the guideway is also moved, e.g. travelling crane bridge type
5/06 • Manipulators combined with a control cab for the operator

7/00 **Micromanipulators**

9/00 **Programme-controlled manipulators**
9/02 • characterised by movement of the arms, e.g. cartesian co-ordinate type (B25J 9/06 takes precedence) **[4]**
9/04 • • by rotating at least one arm, excluding the head movement itself, e.g. cylindrical co-ordinate type or polar co-ordinate type **[4]**
9/06 • characterised by multi-articulated arms **[4]**
9/08 • characterised by modular constructions **[4]**
9/10 • characterised by positioning means for manipulator elements **[4]**
9/12 • • electric **[4]**
9/14 • • fluid **[4]**
9/16 • Programme controls (total factory control, i.e. centrally controlling a plurality of machines, G05B 19/418) **[4]**
9/18 • • electric **[4]**
9/20 • • fluidic **[4]**
9/22 • • Recording or playback systems (in general G05B 19/42) **[4]**

11/00 **Manipulators not otherwise provided for**

13/00 **Controls for manipulators** (programme controls B25J 9/16) **[4]**
13/02 • Hand grip control means
13/04 • Foot-operated control means
13/06 • Control stands, e.g. consoles, switchboards
13/08 • by means of sensing devices, e.g. viewing or touching devices **[4]**

15/00 Gripping heads
15/02 • servo-actuated
15/04 • with provision for the remote detachment or exchange of the head or parts thereof
15/06 • with vacuum or magnetic holding means
15/08 • having finger members (B25J 15/02, B25J 15/04 take precedence) **[4]**
15/10 • • with three or more finger members **[4]**
15/12 • • with flexible finger members **[4]**

17/00 Joints
17/02 • Wrist joints

18/00 Arms [4]
18/02 • extensible **[4]**
18/04 • • rotatable **[4]**
18/06 • flexible **[4]**

19/00 Accessories fitted to manipulators, e.g. for monitoring, for viewing; Safety devices combined with or specially adapted for use in connection with manipulators (safety devices in general F16P; protection against radiation in general G21F)
19/02 • Sensing devices **[4]**
19/04 • • Viewing devices **[4]**
19/06 • Safety devices **[4]**

21/00 Chambers provided with manipulation devices (constructional features of the mounting of the manipulator in the wall B25J 1/08)
21/02 • Glove-boxes, i.e. chambers in which manipulations are performed by the human hands in gloves built into the chamber walls; Gloves therefor