

SECTION B — PERFORMING OPERATIONS; TRANSPORTING

B21 MECHANICAL METAL-WORKING WITHOUT ESSENTIALLY REMOVING MATERIAL; PUNCHING METAL

B21J FORGING; HAMMERING; PRESSING; RIVETING; FORGE FURNACES (rolling of metal B21B; making particular products by forging or pressing B21K; cladding or plating B23K; finishing surfaces by hammering B23P 9/04; compacting surfaces by blasting with particulate material B24C 1/10; general features of presses, presses for consolidating scrap B30B; furnaces in general F27)

Subclass index

PREPARING METAL STOCK.....	1/00
FORGING; HAMMERING; PRESSING	
General methods, equipment therefor.....	5/00
Machines, presses, hammers.....	7/00-13/00
Lubrication.....	3/00
Furnaces.....	17/00
RIVETING.....	15/00
OTHER BLACKSMITHS' REQUISITES.....	19/00

1/00	Preparing metal stock	7/12	• • • the lever being a spring, i.e. spring hammers
1/02	• Preliminary treatment of metal stock without particular shaping, e.g. salvaging segregated zones, forging or pressing in the rough (modifying the physical properties by deformation C21D 7/00, C22F 1/00)	7/14	• • Forging machines working with several hammers
1/04	• Shaping in the rough solely by forging or pressing	7/16	• • • in rotary arrangements
1/06	• Heating or cooling methods or arrangements specially adapted for performing forging or pressing operations	7/18	• • Forging machines working with die jaws, e.g. pivoted, movable laterally of the forging or pressing direction, e.g. for swaging
3/00	Lubricating during forging or pressing (lubricating in general F16N)	7/20	• Drives for hammers; Transmission means therefor
5/00	Methods for forging, hammering, or pressing (for working sheet metal or metal tubes, rods, or profiles B21D; for working wire B21F); Special equipment or accessories therefor	7/22	• • for power hammers
5/02	• Die forging; Trimming by making use of special dies	7/24	• • • operated by steam, air, or other gaseous pressure
5/04	• by directly applied fluid pressure or explosive action	7/26	• • • • operated by internal combustion
5/06	• for performing particular operations	7/28	• • • • operated by hydraulic or liquid pressure
5/08	• • Upsetting	7/30	• • • • operated by electro-magnets
5/10	• • Piercing billets (in combination with extrusion B21C 23/00)	7/32	• • • • operated by rotary drive, e.g. electric motor
5/12	• • Forming profiles on internal or external surfaces (making screw-thread by forging, pressing, or hammering B21K)	7/34	• • • • operating both the hammer and the anvil, so-called counter-tup
7/00	Hammers; Forging machines with hammers or die jaws acting by impact (hand hammers B25D; electrical features section H)	7/36	• • for drop hammers
7/02	• Special design or construction	7/38	• • • driven by steam, air, or other gaseous pressure
7/04	• • Power hammers	7/40	• • • driven by hydraulic or liquid pressure
7/06	• • Drop hammers	7/42	• • • • operated by rotary drive, e.g. electric motors
7/08	• • • with rigidly-guided hammer	7/44	• • • • • equipped with belts, ropes, cables, chains
7/10	• • with both drive and hammer connected to a fulcrumed lever, e.g. tail hammers	7/46	• • Control devices specially adapted to forging hammers, not restricted to one of the preceding subgroups
9/00	Forging presses	9/02	• Special design or construction
9/02	• Special design or construction	9/04	• • Piercing presses
9/04	• • Piercing presses	9/06	• • Swaging presses; Upsetting presses
9/06	• • Swaging presses; Upsetting presses	9/08	• • • equipped with devices for heating the workpiece (electric heating elements H05B)
9/08	• • • equipped with devices for heating the workpiece (electric heating elements H05B)	9/10	• Drives for forging presses
9/10	• Drives for forging presses	9/12	• • operated by hydraulic or liquid pressure
9/12	• • operated by hydraulic or liquid pressure	9/14	• • • in conjunction with electric power
9/14	• • • in conjunction with electric power	9/16	• • • in conjunction with steam or gas power
9/16	• • • in conjunction with steam or gas power		

B21J

- 9/18 • • operated by making use of gearing mechanisms, e.g. levers, spindles, crankshafts, eccentrics, toggle-levers, rack bars
- 9/20 • • Control devices specially adapted to forging presses not restricted to one of the preceding subgroups
- 11/00 Forging hammers combined with forging presses; Forging machines with provision for hammering and pressing**
- 13/00 Details of machines for forging, pressing, or hammering**
- 13/02 • Dies or mountings therefor [2]
- 13/03 • • Die mountings [2]
- 13/04 • Frames; Guides
- 13/06 • Hammer tups; Anvils; Anvil blocks
- 13/08 • Accessories for handling work or tools
- 13/10 • • Manipulators (in general B25J)
- 13/12 • • • Turning means
- 13/14 • • Ejecting devices
- 15/00 Riveting**
- 15/02 • Riveting procedures
- 15/04 • • Riveting hollow rivets mechanically
- 15/06 • • Riveting hollow rivets by means of hydraulic, liquid, or gas pressure
- 15/08 • • Riveting by applying heat to the end parts of the rivets to enable heads to be formed
- 15/10 • Riveting machines (electric heating elements H05B)
- 15/12 • • with tools or tool parts having a movement additional to the feed movement, e.g. spin
- 15/14 • • specially adapted for riveting specific articles, e.g. brake lining machines
- 15/16 • • Drives for riveting machines; Transmission means therefor
- 15/18 • • • operated by air pressure or other gas pressure, e.g. explosion pressure
- 15/20 • • • operated by hydraulic or liquid pressure
- 15/22 • • • operated by both hydraulic or liquid pressure and gas pressure
- 15/24 • • • operated by electro-magnets
- 15/26 • • • operated by rotary drive, e.g. by electric motor
- 15/28 • • Control devices specially adapted to riveting machines not restricted to one of the preceding subgroups
- 15/30 • • Particular elements, e.g. supports; Suspension equipment specially adapted for portable riveters
- 15/32 • • • Devices for inserting or holding rivets in position with or without feeding arrangements
- 15/34 • • • • for installing tubular rivets
- 15/36 • • Rivet sets, i.e. tools for forming heads; Mandrels for expanding parts of hollow rivets
- 15/38 • Accessories for use in connection with riveting, e.g. pliers for upsetting; Hand tools for riveting
- 15/40 • • for forming rivet heads
- 15/42 • • Special clamping devices for workpieces to be riveted together, e.g. operating through the rivet holes
- 15/44 • • Rivet hole positioners
- 15/46 • • Positioners for rivets for making tube joints
- 15/48 • • Devices for caulking rivets
- 15/50 • • Removing or cutting devices for rivets
- 17/00 Forge furnaces** (furnaces for heat treatment C21D 9/00; furnaces in general F27)
- 17/02 • electrically heated (electric heating elements H05B)
- 19/00 Blacksmiths' requisites not otherwise provided for**
- 19/02 • Hearths; Air supply arrangements specially adapted therefor
- 19/04 • Anvils; Associated items