

CPC**COOPERATIVE PATENT CLASSIFICATION****E02B****HYDRAULIC ENGINEERING** (ship-lifting [E02C](#); dredging [E02F](#))**E02B 1/00**

Equipment or apparatus for, or methods of, general hydraulic engineering, {e.g. protection of constructions against ice-strains (protection of offshore constructions against ice-loads [E02B 17/0021](#); ice-structures as artificial islands [E02B 17/028](#))}

E02B 1/003

- {Mechanically induced gas or liquid streams in seas, lakes or water-courses for forming weirs or breakwaters; making or keeping water surfaces free from ice, aerating or circulating water, e.g. screens of air-bubbles against sludge formation or salt water entry, pump-assisted water circulation (moving sediments [E02B 3/023](#); for ice breakers [B63B 35/08](#); aerating or circulating water in fish-tanks [A01K 63/042](#); purification of waste water with addition of air [C02F](#); distributing gases in liquids in general [B01F 3/04](#))}

E02B 1/006

- {Arresting, diverting or chasing away fish in water-courses or water intake ducts, seas or lakes, e.g. fish barrages, deterrent devices ([E02B 8/085](#) takes precedence); Devices for cleaning fish barriers}

E02B 1/02

- Hydraulic models ({towing tanks or basins for model vessels [B63B 9/02](#))}

E02B 3/00

Engineering works in connection with control or use of streams, rivers, coasts, or other marine sites (barrages or weirs [E02B 7/00](#)); **Sealing or joints for engineering works in general**

E02B 3/02

- Stream regulation, e.g. breaking up subaqueous rock, cleaning the beds of waterways, directing the water flow ({harvesting water plants [A01D 44/00](#); underwater loosening of soil or rocks for foundation construction [E02D 17/16](#); dredging or scraping devices [E02F 5/28](#))}

E02B 3/023

- • {Removing sediments (in barrages or reservoirs [E02B 8/02](#))}

E02B 3/026

- • {Removing solid rocks}

E02B 3/04

- Structures or apparatus for, or methods of, protecting banks, coasts, or harbours ({[E02B 1/003](#) takes precedence; } sealing or joints [E02B 3/16](#))

E02B 3/041

- • {using active mechanical means, e.g. fluidizing or pumping}

E02B 3/043

- • {Artificial seaweed}

E02B 3/046

- • {Artificial reefs}

E02B 3/06

- • Moles; Piers; Quay walls; Groynes; Breakwaters {Wave dissipating walls; Quay equipment}

E02B 3/062

- • • {Constructions floating in operational condition, e.g. breakwaters or wave dissipating walls (floating oil barriers [E02B 15/08](#); floating stream regulating devices [E02B 3/02](#))}

E02B 3/064

- • • • {Floating landing-stages (construction of pontoons [B63B 35/34](#); landing bridges [E01D 15/14](#))}

E02B 3/066

- • • {Quays (bulkheads [E02D 5/00](#); caissons [E02D 23/00](#); retaining walls [E02D 29/00](#))}

E02B 3/068

- • • {Landing stages for vessels (floating landing-stages [E02B 3/064](#); landing bridges [E01D 15/14](#))}

E02B 3/08

- • • Structures of loose stones with or without piles (piles [E02D 5/00](#))

- E02B 3/10 . . Dams; Dykes; Sluice ways or other structures for dykes, dams, or the like (making embankments or dams in general [E02D 17/18](#))
- E02B 3/102 . . . {Permanently installed raisable dykes}
- E02B 3/104 {with self-activating means}
- E02B 3/106 . . . {Temporary dykes}
- E02B 3/108 {with a filling, e.g. filled by water or sand}
- E02B 3/12 . . Revetment of banks, dams, water-courses, or the like, {e.g. the sea-floor} (of slopes in general [E02D 17/20](#))
- E02B 3/121 . . . {Devices for applying linings on banks or the water bottom (for lining canals [E02B 5/02](#))}
- E02B 3/122 . . . {Flexible prefabricated covering elements, e.g. mats, strips}
- E02B 3/123 {mainly consisting of stone, concrete or similar stony material}
- E02B 3/124 {mainly consisting of metal}
- E02B 3/125 {mainly consisting of vegetable material, e.g. wood, reeds}
- E02B 3/126 {mainly consisting of bituminous material or synthetic resins}
- E02B 3/127 {bags filled at the side}
- E02B 3/128 . . . {Coherent linings made on the spot, e.g. cast in situ, extruded on the spot (for canal linings [E02B 5/02](#))}
- E02B 3/129 . . . {Polyhedrons, tetrapods or similar bodies, whether or not threaded on strings}
- E02B 3/14 . . . Preformed blocks {or slabs for forming essentially continuous surfaces}; Arrangements thereof {(preassembled to constitute flexible mats [E02B 3/122](#); pavements [E01C 5/00](#))}
- E02B 3/16 . Sealings or joints ({[E02B 3/12](#) takes precedence; sealings for specific structural foundation elements, see the relevant groups for those elements; sealings for barrage or lock gates [E02B 7/54](#); joints for foundation structures [E02D 29/16](#); sealing joints not restricted to hydraulic engineering work [E04B 1/68](#))}
- E02B 3/18 . Reclamation of land from water {or marshes} (drainage of soil [E02B 11/00](#))
- E02B 3/20 . Equipment for shipping on coasts, in harbours or on other fixed marine structures, e.g. bollards (tying-up, anchoring [B63B 21/00](#), e.g. bollards for shipping [B63B 21/06](#); buoys [B63B 22/00](#); {equipment specially adapted for use in locks or dry docks [E02C 1/10](#))}
- E02B 3/24 . . Mooring posts
- E02B 3/26 . . Fenders ({fenders for protecting offshore constructions [E02B 17/003](#); fenders integral with waterborne vessels or specially adapted therefor [B63B 59/02](#))}
- E02B 3/28 . . Fender piles
- E02B 5/00** **Artificial water canals, {e.g. irrigation canals}** (for water-power plants [E02B 9/02](#); irrigation of soil [E02B 13/00](#))
- E02B 5/005 . {Canals entirely situated above ground level, e.g. on piers (canal bridges [E01D 18/00](#))}
- E02B 5/02 . Making or lining canals {(linings in general [E02B 13/02](#); digging canals [E02F](#))}
- E02B 5/04 . Navigable canals
- E02B 5/06 . . Operating equipment in connection with canals (ship-lifting devices [E02C](#))

- E02B 5/08
 - Details, e.g. gates, screens
 - NOTE**

This subdivision is limited to closures, devices for arresting waterborne materials and divisors
- E02B 5/082
 - • {Closures (for irrigation conduits [E02B 13/02](#))}
- E02B 5/085
 - • {Arresting devices for waterborne materials, e.g. gratings (fish barrages [E02B 1/006](#); removing sediments [E02B 3/023](#); arresting oil or similar pollutants [E02B 15/08](#); for waste water purification [E02F](#); in sewers [E03F 5/14](#))}
- E02B 5/087
 - • {Divisors}
- E02B 7/00**

Barrages or weirs; Layout, construction, methods of, or devices for, making same (for protecting banks, coasts, or harbours [E02B 3/04](#); sealings or joints [E02B 3/16](#); handling building or like materials for hydraulic engineering [E02D 15/00](#); foundations in general [E02D 27/00](#))
- E02B 7/005
 - {Deformable barrages or barrages consisting of permanently deformable elements, e.g. inflatable, with flexible walls (closures [E02B 7/54](#); floating oil barrages [E02B 15/08](#))}
- E02B 7/02
 - Fixed barrages
- E02B 7/04
 - • Dams across vallies
- E02B 7/06
 - • • Earth-fill dams; Rock-fill dams
- E02B 7/08
 - • • Wall dams
- E02B 7/10
 - • • • Gravity dams, i.e. those in which the weight of the structure prevents overturning
- E02B 7/12
 - • • • Arch dams
- E02B 7/14
 - • • • Buttress dams
- E02B 7/16
 - Fixed weirs; Superstructures or flash-boards therefor
- E02B 7/18
 - • Siphon weirs {(syphons in hydraulic engineering in general [E02D 29/08](#))}
- E02B 7/20
 - Movable barrages; Lock {or dry-dock} gates
- E02B 7/205
 - • {Barrages controlled by the variations of the water level; automatically functioning barrages (level regulators [G05D 9/00](#); the documents are filed in this subdivision and the relevant subdivision [E02B 7/26](#) - [E02B 7/50](#))}
- E02B 7/22
 - • Stop log dams; Emergency gates
- E02B 7/24
 - • Needle weirs
- E02B 7/26
 - • Vertical-lift gates
- E02B 7/28
 - • • with sliding gates
- E02B 7/30
 - • • with guide wheels or rollers for the gates
- E02B 7/32
 - • • Cylindrical or tubular gates
- E02B 7/34
 - • • Flash- boards for vertical-lift gates
- E02B 7/36
 - • • Elevating mechanisms for vertical-lift gates
- E02B 7/38
 - • Rolling gates {or gates moving horizontally in their own plane, e.g. by sliding}
- E02B 7/40
 - • Swinging or turning gates
- E02B 7/42
 - • • Gates of segmental or sector-like shape with horizontal axis

- E02B 7/44 . . . Hinged-leaf gates
- E02B 7/46 . . . Gates turning round a horizontal axis arranged midway of the flap
- E02B 7/48 . . . Roof or double shutter gates
- E02B 7/50 . . Floating gates
- E02B 7/52 . . Equipment preventing vibration of gates
- E02B 7/54 . . Sealings for gates

- E02B 8/00** **Details of barrages or weirs (cleaning or keeping clear the surface of open water [E02B 15/00](#)); {Energy dissipating devices carried by lock or dry-dock gates}**
- E02B 8/02 . Sediment base gates; Sand sluices; Structures for retaining arresting waterborne material
- E02B 8/023 . . {Arresting devices for waterborne materials ([E02B 1/003](#) takes precedence; in artificial watercourses [E02B 5/085](#); arresting oil or the like [E02B 15/08](#); sieving devices for waste water purification [C02F](#); in sewers [E03F 5/14](#))}
- E02B 8/026 . . . {Cleaning devices (for fish barrages [E02B 1/006](#))}
- E02B 8/04 . Valves, slides, or the like; Submerged sluice gates
- E02B 8/045 . . {automatically movable}
- E02B 8/06 . Spillways; Devices for dissipation of energy, e.g. for reducing eddies {also for lock or dry-dock gates}
- E02B 8/08 . Fish passes {or other means providing for migration of fish}; Passages for rafts or boats
- E02B 8/085 . . {Devices allowing fish migration, e.g. fish traps (arresting or diverting fish exclusively [E02B 1/006](#))}

- E02B 9/00** **Water-power plants; Layout, construction or equipment, methods of, or apparatus for, making same**
- E02B 9/02 . Water-ways
- E02B 9/022 . . {Closures}
- E02B 9/025 . . . {automatically movable}
- E02B 9/027 . . . {Sliding closures ([E02B 9/025](#) takes precedence)}
- E02B 9/04 . . Free-flow canals or flumes; Intakes (gratings or screens therefor [E02B 5/08](#))
- E02B 9/06 . . Pressure galleries or pressure conduits; Galleries specially adapted to house pressure conduits; Means specially adapted for use therewith, e.g. housings, valves, gates (driving inclined galleries [E21D 9/02](#); valves in general [F16K](#); conduits in general [F16L](#))
- E02B 9/08 . Tide or wave power plants (water-pressure machines, tide or wave motors [F03B](#))

- E02B 11/00** **Drainage of soil, e.g. for agricultural purposes {(draining sports grounds [E01C 13/083](#); for consolidating foundation soil, e.g. sand drain piles [E02D 3/10](#))}**
- E02B 11/005 . {Drainage conduits}
- E02B 11/02 . Drainage device- laying apparatus, e.g. drainage ploughs

WARNING

Group [E02B 11/02](#) is incomplete, see also [E02F 3/00](#) and [E02F 5/00](#), dredgers and soil-shifting machines

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| E02B 13/00 | Irrigation ditches, i.e. gravity flow, open channel water distribution systems (retaining waterborne material in irrigation canals E02B 5/085 ; other distribution systems for watering or spraying gardens, fields, sports grounds, or the like, A01G 25/00 ; {built-in irrigation means for sports grounds E01C 13/083 }) |
| E02B 13/02 | <ul style="list-style-type: none"> • Closures for irrigation conduits |
| E02B 15/00 | Cleaning or keeping clear the surface of open water; Apparatus therefor (construction of ships or other waterborne vessels B63B , e.g. vessels specially adapted for collecting pollution from open water B63B 35/32 ; in swimming or splash baths or pools E04H 4/16) |
| E02B 2015/005 | <ul style="list-style-type: none"> • {Tent-like structures for dealing with pollutant emissions below the water surface} |
| E02B 15/02 | <ul style="list-style-type: none"> • from ice {otherwise than according to E02B 1/003} (construction of ships B63B; {ice-breakers or amphibious vehicles B63B 35/08; protecting hydraulic engineering structures against ice-load E02B 1/00}) |
| E02B 15/04 | <ul style="list-style-type: none"> • Devices for cleaning or keeping clear the surface of open water from oil or like floating materials by separating or removing these materials ({stopping water-borne material in artificial water canals E02B 5/085; stopping water-borne material at barrages or weirs E02B 8/023; other treatment of water, waste water or sewage C02F; materials for treating liquid pollutants; e.g. oil, gasoline, fat, C09K 3/32; {separation of oil in sewage conduits E03F 5/16}) |
| E02B 15/041 | <ul style="list-style-type: none"> • • {Devices for distributing materials, e.g. absorbed or magnetic particles over a surface of open water to remove the oil, with or without means for picking up the treated oil (E02B 15/042 takes precedence)} |
| E02B 15/042 | <ul style="list-style-type: none"> • • {Devices for removing the oil by combustion with or without means for picking up the oil} |
| E02B 15/043 | <ul style="list-style-type: none"> • • {Devices or methods for removing oil by means of freezing} |
| E02B 15/045 | <ul style="list-style-type: none"> • • {Separating means for recovering oil floating on a surface of open water (E02B 15/048 takes precedence; separation in general B01D)} |
| E02B 15/046 | <ul style="list-style-type: none"> • • {Collection of oil using vessels, i.e. boats, barges} |
| E02B 15/047 | <ul style="list-style-type: none"> • • • {provided with an oil collecting boom arranged on at least one side of the hull} |
| E02B 15/048 | <ul style="list-style-type: none"> • • {Oil collectors moved over the water skimming the water surface} |
| E02B 15/06 | <ul style="list-style-type: none"> • • Barriers therefor (E02B 15/08 takes precedence) {construed for applying processing agents or for collecting pollutants, e.g. absorbent} |
| E02B 15/08 | <ul style="list-style-type: none"> • • Devices for reducing the polluted area {with or} without {additional devices for} removing the material |
| E02B 15/0807 | <ul style="list-style-type: none"> • • • {with stabilising elements} |
| E02B 15/0814 | <ul style="list-style-type: none"> • • • {with underwater curtains} |
| E02B 15/0821 | <ul style="list-style-type: none"> • • • {adapted for protection against fire or extreme heat} |
| E02B 15/0828 | <ul style="list-style-type: none"> • • • {fixed to the side of a boat for containing small leaks in the hull} |
| E02B 15/0835 | <ul style="list-style-type: none"> • • • {fixed to permanent structure, e.g. harbour wall or river bank} |
| E02B 15/0842 | <ul style="list-style-type: none"> • • • {adapted to be towed for operation} |
| E02B 15/085 | <ul style="list-style-type: none"> • • • {Details of connectors} |
| E02B 15/0857 | <ul style="list-style-type: none"> • • • {Buoyancy material} |
| E02B 15/0864 | <ul style="list-style-type: none"> • • • • {Air (E02B 15/0878 takes precedence)} |

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| E02B 15/0871 | {self-inflating barriers} |
| E02B 15/0878 | {Air and water} |
| E02B 15/0885 | {Foam} |
| E02B 15/0892 | {using expanded polystyrene foam} |
| E02B 15/10 | . . Devices for removing the material from the surface {(E02B 15/041, E02B 15/042, E02B 15/06 take precedence)} |
| E02B 15/101 | . . . {Means floating loosely on the water absorbing the oil (absorbing materials C02F)} |
| E02B 15/102 | . . . {Discs} |
| E02B 15/103 | . . . {Rotary drums} |
| E02B 15/104 | . . . {Conveyors; Paddle wheels; Endless belts (E02B 15/101 takes precedence)} |
| E02B 15/105 | . . . {Archimedian screws} |
| E02B 15/106 | . . . {Overflow skimmers with suction heads; suction heads} |
| E02B 15/107 | . . . {Whirling means forming a vortex in the water; cyclones} |
| E02B 15/108 | . . . {Ejection means} |
| E02B 17/00 | Artificial islands mounted on piles or like supports, e.g. platforms on raisable legs {or offshore constructions}; construction methods therefor ({construction methods for floating platforms B63B 9/065}; anchoring floating platforms B63B 21/00; floating platforms, e.g. anchored, B63B 35/44; {underwater reservoirs B65D 88/78}) |
| E02B 17/0004 | . {Nodal points} |
| E02B 17/0008 | . {Methods for grouting offshore structures; apparatus therefor (cementing boreholes E21B 33/13)} |
| E02B 17/0013 | . {Tube closures for releasable sealing hollow tubes} |
| E02B 17/0017 | . {Means for protecting offshore constructions} |
| E02B 17/0021 | . . {against ice-loads} |
| E02B 17/0026 | . . {against corrosion} |
| E02B 17/003 | . . {Fenders} |
| E02B 17/0034 | . {Maintenance, repair or inspection of offshore constructions} |
| E02B 2017/0039 | . {Methods for placing the offshore structure} |
| E02B 2017/0043 | . . {Placing the offshore structure on a pre-installed foundation structure} |
| E02B 2017/0047 | . . {using a barge} |
| E02B 2017/0052 | . {Removal or dismantling of offshore structures from their offshore location} |
| E02B 2017/0056 | . {Platforms with supporting legs} |
| E02B 2017/006 | . . {with lattice style supporting legs} |
| E02B 2017/0065 | . . {Monopile structures} |
| E02B 2017/0069 | . . {Gravity structures} |
| E02B 2017/0073 | . . {Details of sea bottom engaging footing} |
| E02B 2017/0078 | . . . {Suction piles, suction cans} |
| E02B 2017/0082 | . . . {Spudcans, skirts or extended feet} |

- E02B 2017/0086 . . . {Large footings connecting several legs or serving as a reservoir for the storage of oil or gas}
- E02B 2017/0091 . {Offshore structures for wind turbines}
- E02B 2017/0095 . {Connections of subsea risers, piping or wiring with the offshore structure}
- E02B 17/02 . placed by lowering the supporting construction to the bottom, e.g. with subsequent fixing thereto
- E02B 17/021 . . {with relative movement between supporting construction and platform}
- E02B 17/022 . . . {adapted to travel on the bottom (walking gears moving dredgers forward step-by-step [E02F 9/04](#))}
- E02B 17/024 . . . {shock absorbing means for the supporting construction}
- E02B 17/025 . . {Reinforced concrete structures ([E02B 17/021](#) takes precedence)}
- E02B 17/027 . . {steel structures ([E02B 17/021](#) takes precedence)}
- E02B 17/028 . . {Ice-structures}
- E02B 17/04 . Equipment specially adapted for raising, lowering, or immobilising the working platform relative to the supporting construction (platform lifts in general [B66F 7/00](#))
- E02B 17/06 . . for immobilising, e.g. using wedges or clamping rings {(as elements of the raising or lowering means [E02B 17/08](#))}
- E02B 17/08 . . for raising or lowering
- E02B 17/0809 . . . {the equipment being hydraulically actuated (outriggers for cranes [B66C 23/80](#))}
- E02B 17/0818 . . . {with racks actuated by pinions (lifting jacks [B66F 3/02](#) - [B66F 3/06](#))}
- E02B 17/0827 . . . {with screws and nuts mechanism (climbing jacks with following nut [E02B 17/0881](#); lifting jacks [B66C 3/08](#))}
- E02B 17/0836 . . . {with climbing jacks (climbing cranes [B66C 23/32](#); hydraulic lifting jacks [B66F 3/24](#) and subgroups)}
- E02B 17/0845 {with inflatable clamping rings}
- E02B 17/0854 {with clamping wedges, eccentric clamping devices and so on (catch devices for elevators [B66B 5/20](#), [B66B 5/24](#), [B66B 5/26](#))}
- E02B 17/0863 {with rack and pawl mechanism}
- E02B 17/0872 {with locking pins engaging holes or cam surfaces}
- E02B 17/0881 {with following nuts}
- E02B 17/089 {with subtentation blocks, feet and so on}
- E02B 2201/00** **Devices, constructional details or methods of hydraulic engineering not otherwise provided for**
- E02B 2201/02 . Devices and methods for creating a buffer zone in the water to separate e.g. salt and sweet water
- E02B 2201/04 . using old tires for hydraulic engineering
- E02B 2201/50 . Devices for sequentially discharging constant liquid quantities, e.g. into different irrigation channels