

**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](#) to [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

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

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}
<b>E02B 17/00</b>	<b>Artificial islands mounted on piles or like supports, e.g. platforms on raisable legs {or offshore constructions}; construction methods therefor</b> ({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](#) to [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