

CPC COOPERATIVE PATENT CLASSIFICATION

F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

ENGINEERING IN GENERAL

F17 STORING OR DISTRIBUTING GASES OR LIQUIDS

F17D PIPE-LINE SYSTEMS; PIPE-LINES (pumps or compressors [F04](#); fluid dynamics [F15D](#); valves or the like [F16K](#); pipes, laying pipes, supports, joints, branches, repairing, work on the entire line, accessories [F16L](#); steam traps or the like [F16T](#); fluid-pressure electric cables [H01B 9/06](#))

NOTE

In this subclass, pipe-line systems are interpreted as systems described in flow sheets as well as arrangements of co-operating elements, the elements *per se* being covered in the relevant subclasses.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

1/00	Pipe-line systems (conveying articles or materials through a pipe- line by means of a fluid carrier B65G 51/00 , B65G 53/00 ; liquids B67D ; special devices for transferring liquids from bulk storage containers into vehicles or boats or <i>vice versa</i> , e.g. loading or unloading vehicles or portable containers B67D 7/00 ; conveying material which has been excavated by a dredger or soil shifter through a pipe- line E02F 7/10 ; sewer pipe-line systems E03F 3/00 ; thermal insulation of pipe-lines F16L 59/00 ; central heating systems F24D)	1/16	. . Facilitating the conveyance of liquids or effecting the conveyance of viscous products by modification of their viscosity {(changing the flow or the viscosity by adding a chemical agent C09K 3/00 , C10M)}
1/005	. {for a two-phase gas-liquid flow}	1/17	. . . by mixing with another liquid {, i.e. diluting}
1/02	. for gases or vapours	1/18	. . . by heating
1/04	. . for distribution of gas	1/20	. Arrangements or systems of devices for influencing or altering dynamic characteristics of the systems, e.g. for damping pulsations caused by opening or closing of valves (fluid dynamics F15D ; damping pulsations in fluids in pipes in general F16L 55/04)
1/05	. . . Preventing freezing (by heating F16L 53/30)		
1/06	. . for steam		
1/065	. . Arrangements for producing propulsion of gases or vapours	3/00	Arrangements for supervising or controlling working operations
1/07	. . . by compression	3/01	. for controlling, signalling, or supervising the conveyance of a product
1/075	. . . by mere expansion from an initial pressure level, e.g. by arrangement of a flow-control valve	3/03	. for controlling, signalling, or supervising the conveyance of several different products following one another in the same conduit, e.g. for switching from one receiving tank to another
1/08	. for liquids or viscous products (water-main or service pipe systems E03B 7/04 ; domestic hot-water supply systems F24D 17/00)	3/05	. . the different products not being separated (separation of contaminants by distillation B01D 3/00)
1/082	. . {for cold fluids, e.g. liquefied gas (F17D 1/086 takes precedence)}	3/08	. . the different products being separated by "go-devils", e.g. spheres (cleaning devices moved along inside a pipe-lines by fluid pressure B08B 9/04 ; {pigs or moles <i>per se</i> , their launching and detection F16L 55/26)}
1/084	. . {for hot fluids (F17D 1/086 takes precedence)}	3/10	. for taking out the product in the line (sampling in general, examining the physical or chemical properties of materials G01N)
1/086	. . {for explosives}	3/12	. for injecting a composition into the line
1/088	. . {for solids or suspensions of solids in liquids, e.g. slurries (F17D 1/086 takes precedence)}	3/14	. for eliminating water (separation of liquids B01D , e.g. B01D 17/00 ; separation of gases or vapours B01D 53/00)
1/12	. . Conveying liquids or viscous products by pressure of another fluid	3/145	. . {in gas pipelines}
1/13	. . Conveying liquids or viscous products by gravity		
1/14	. . Conveying liquids or viscous products by pumping		

F17D

- 3/16 . for eliminating particles in suspension (from liquids by sedimentation [B01D 21/00](#); separation by filtration or otherwise [B01D 24/00](#) - [B01D 51/00](#); centrifugal apparatus [B04](#))
- 3/18 . for measuring the quantity of conveyed product (measuring volume or volume flow, in general [G01F](#))
- 5/00** **Protection or supervision of installations**
(arrangements for protecting foundations [E02D 31/00](#); protecting pipes from damage or internal or external wear [F16L 57/00](#), against corrosion and scale [F16L 58/00](#); investigation of the fluid-tightness of structures [G01M 3/00](#))
- 5/005 . {of gas pipelines, e.g. alarm}
- 5/02 . Preventing, monitoring, or locating loss
- 5/04 . . by means of a signalling fluid enclosed in a double wall
- 5/06 . . using electric or acoustic means
- 5/08 . Protection of installations or persons from the effects of high voltage induced in the pipe-line (emergency protective circuit arrangements [H02H](#))