

CPC**COOPERATIVE PATENT CLASSIFICATION****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.

F17D 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 vice versa, 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](#))

- F17D 1/005 . {for a two-phase gas-liquid flow}
- F17D 1/02 . for gases or vapours
- F17D 1/04 . . for distribution of gas
- F17D 1/05 . . . Preventing freezing (by heating [F16L 53/00](#))
- F17D 1/06 . . for steam
- F17D 1/065 . . Arrangements for producing propulsion of gases or vapours
- F17D 1/07 . . . by compression
- F17D 1/075 . . . by mere expansion from an initial pressure level, e.g. by arrangement of a flow-control valve
- F17D 1/08 . for liquids or viscous products (water-main or service pipe systems [E03B 7/04](#); domestic hot-water supply systems [F24D 17/00](#))
- F17D 1/082 . . {for cold fluids, e.g. liquified gas ([F17D 1/086](#) takes precedence)}
- F17D 1/084 . . {for hot fluids ([F17D 1/086](#) takes precedence)}
- F17D 1/086 . . {for explosives}
- F17D 1/088 . . {for solids or suspensions of solids in liquids, e.g. slurries ([F17D 1/086](#) takes precedence)}
- F17D 1/12 . . Conveying liquids or viscous products by pressure of another fluid
- F17D 1/13 . . Conveying liquids or viscous products by gravity
- F17D 1/14 . . Conveying liquids or viscous products by pumping
- F17D 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](#))}
- F17D 1/17 . . . by mixing with another liquid, {i.e. diluting}
- F17D 1/18 . . . by heating

- F17D 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](#))

- F17D 3/00** **Arrangements for supervising or controlling working operations**
- F17D 3/01
 - for controlling, signalling, or supervising the conveyance of a product
- F17D 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
- F17D 3/05
 - . the different products not being separated ([separation of contaminants by distillation B01D 3/00](#))
- F17D 3/08
 - . the different products being separated by "go-devils", e.g. spheres ([cleaning devices moved along inside a pipe-line by fluid pressure B08B 9/04](#); {pigs or moles per se, their launching and detection [F16L 55/26](#)})
- F17D 3/10
 - for taking out the product in the line ([sampling in general, examining the physical or chemical properties of materials G01N](#))
- F17D 3/12
 - for injecting a composition into the line
- F17D 3/14
 - for eliminating water ([separation of liquids B01D](#), e.g. [B01D 17/00](#); [separation of gases or vapours B01D 53/00](#))
- F17D 3/145
 - . {in gas pipelines}
- F17D 3/16
 - for eliminating particles in suspension ([from liquids by sedimentation B01D 21/00](#); [separation by filtration or otherwise B01D 24/00 to B01D 51/00](#); [centrifugal apparatus B04](#))
- F17D 3/18
 - for measuring the quantity of conveyed product ([measuring volume or volume flow, in general G01F](#))

- F17D 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](#))
- F17D 5/005
 - {of gas pipelines, e.g. alarm}
- F17D 5/02
 - Preventing, monitoring, or locating loss
- F17D 5/04
 - . by means of a signalling fluid enclosed in a double wall
- F17D 5/06
 - . using electric or acoustic means
- F17D 5/08
 - Protection of installations or persons from the effects of high voltage induced in the pipe-line ([emergency protective circuit arrangements H02H](#))