

# 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.

- |             |   |             |  |
|-------------|---|-------------|--|
| <b>1/00</b> | <b>Pipe-line systems</b> (conveying articles or materials through a pipe- line by means of a fluid carrier <a href="#">B65G 51/00</a> , <a href="#">B65G 53/00</a> ; liquids <a href="#">B67D</a> ; 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 <a href="#">B67D 7/00</a> ; conveying material which has been excavated by a dredger or soil shifter through a pipe-line <a href="#">E02F 7/10</a> ; sewer pipe-line systems <a href="#">E03F 3/00</a> ; thermal insulation of pipe-lines <a href="#">F16L 59/00</a> ; central heating systems <a href="#">F24D</a> ) | 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 <a href="#">C09K 3/00</a> , <a href="#">C10M</a> )}  |
| 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 <a href="#">F15D</a> ; damping pulsations in fluids in pipes in general <a href="#">F16L 55/04</a> ) |
| 1/05        | • • • Preventing freezing (by heating <a href="#">F16L 53/30</a> )  |             |  |
| 1/06        | • • for steam   |             |  |
| 1/065       | • • Arrangements for producing propulsion of gases or vapours   | <b>3/00</b> | <b>Arrangements for supervising or controlling working operations</b>  |
| 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 <a href="#">E03B 7/04</a> ; domestic hot-water supply systems <a href="#">F24D 17/00</a> )  | 3/05        | • • the different products not being separated (separation of contaminants by distillation <a href="#">B01D 3/00</a> )   |
| 1/082       | • • {for cold fluids, e.g. liquefied gas ( <a href="#">F17D 1/086</a> 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 <a href="#">B08B 9/04</a> ; {pigs or moles <i>per se</i> , their launching and detection <a href="#">F16L 55/26</a> )}                               |
| 1/084       | • • {for hot fluids ( <a href="#">F17D 1/086</a> takes precedence)}   | 3/10        | • for taking out the product in the line (sampling in general, examining the physical or chemical properties of materials <a href="#">G01N</a> )   |
| 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 ( <a href="#">F17D 1/086</a> takes precedence)}  | 3/14        | • for eliminating water (separation of liquids <a href="#">B01D</a> , e.g. <a href="#">B01D 17/00</a> ; separation of gases or vapours <a href="#">B01D 53/00</a> )  |
| 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](#))