

# CPC COOPERATIVE PATENT CLASSIFICATION

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

### ENGINEERING IN GENERAL

#### F17 STORING OF DISTRIBUTING GASES OR LIQUIDS (water supply [E03B](#))

#### 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.

<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> )	1/18	. . . by heating
		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> )
		<b>3/00</b>	<b>Arrangements for supervising or controlling working operations</b>
		3/01	. for controlling, signalling, or supervising the conveyance of a product
1/005	. {for a two-phase gas-liquid flow }	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
1/02	. for gases or vapours		
1/04	. . for distribution of gas		
1/05	. . . Preventing freezing (by heating <a href="#">F16L 53/30</a> )	3/05	. . the different products not being separated (separation of contaminants by distillation <a href="#">B01D 3/00</a> )
1/06	. . for steam		
1/065	. . Arrangements for producing propulsion of gases or vapours	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 <u>per se</u> , their launching and detection <a href="#">F16L 55/26</a> })
1/07	. . . by compression		
1/075	. . . by mere expansion from an initial pressure level, e.g. by arrangement of a flow-control valve	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> )
1/08	. 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> )	3/12	. for injecting a composition into the line
1/082	. . {for cold fluids, e.g. liquefied gas ( <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> )
1/084	. . {for hot fluids ( <a href="#">F17D 1/086</a> takes precedence)}		
1/086	. . {for explosives }	3/145	. . {in gas pipelines }
1/088	. . {for solids or suspensions of solids in liquids, e.g. slurries ( <a href="#">F17D 1/086</a> takes precedence)}	3/16	. for eliminating particles in suspension (from liquids by sedimentation <a href="#">B01D 21/00</a> ; separation by filtration or otherwise <a href="#">B01D 24/00</a> - <a href="#">B01D 51/00</a> ; centrifugal apparatus <a href="#">B04</a> )
1/12	. . Conveying liquids or viscous products by pressure of another fluid		
1/13	. . Conveying liquids or viscous products by gravity	3/18	. for measuring the quantity of conveyed product (measuring volume or volume flow, in general <a href="#">G01F</a> )
1/14	. . Conveying liquids or viscous products by pumping		
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> }		
1/17	. . . by mixing with another liquid {, i.e. diluting }		

- 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](#))