CLAIMS

1. A system for controlling flow of material (14) within a subterranean or submarine pipe (12) without having to be housed within a maintenance chamber, wherein the system comprises;

a hollow projection (16) secured to the pipe (12) wherein the hollow projection (16) projects from the pipe (12) to ground level;

a sealing means (18) for closing the hollow projection (16);

a shuttle (20) contained within the hollow projection (16) wherein the shuttle (20) is serviceable from ground level and insertable into the hollow projection (16) from ground level and wherein the shuttle (20) is traversable within the hollow projection;

a chamber (28) defined as a volumetric space within the hollow projection (16) between the shuttle (20) and the sealing means (18); and

a means to move the shuttle (20) linearly within the hollow projection (16);

wherein:

flow-affecting part of the shuttle (20) is introducible into the pipe (12) to restrict flow of material (14) and withdrawable into the hollow projection (26) to allow flow of material (14) within the pipe (12); and

the chamber (28) allows fluid to be introduced into the chamber (28) or withdrawn from the chamber (28) to vary pressure exerted on the shuttle (20) so as to move the shuttle (20) linearly along the central axis of the hollow projection (16).

2. The system as claimed in Claim 1, wherein the hollow projection (16) is upstanding from any angle above a longitudinal axis of the pipe (12).

3. The system as claimed in Claim 2, wherein the hollow projection (16) is aligned at an angle of 40° to 90° from the longitudinal axis of the pipe (12).

4. The system as claimed in Claim 1, wherein the pressure in the chamber (28) is pneumatic.

5. The system as claimed in Claim 1, wherein the pressure in the chamber (28) is hydraulic.

6. The system as claimed in Claim 1, wherein pressure within the chamber (28) is increased by pumping fluid into the chamber (28) and pressure within the chamber (28) is reduced by withdrawing fluid from the chamber (28).

7. The system as claimed in Claim 1, wherein the shuttle (20) has a free terminal end which is congruent with cross-section of the pipe (12) and fits within the hollow projection (16).

8. The system as claimed in Claim 1, wherein the shuttle (20) has a free terminal end which includes a bladder portion.

9. The system as claimed in Claim 1, wherein the shuttle (20) has a free terminal end which includes a solid portion and a bladder portion.

10. The system as claimed in any of Claims 8 or 9, wherein the bladder portion is an expandable bladder whose volume is expandable by increasing pressure within the bladder.

11. The system as claimed in Claim 1, wherein at least one inflatable side

seal (50) is fitted in a recess formed vertically around the external surface of the shuttle (20) or circumferentially around the shuttle (20).

12. The system as claimed in Claim 1, wherein terminal end of the shuttle (20) is wedge shaped in order to create a thrust in the direction of the central axis of the hollow projection (16).

13. The system as claimed in any of Claims 9, 11 or 12, wherein the shuttle (20) is prevented from rotating along the central axis of the hollow projection (16) by at least one tongue (45) formed vertically along inner circumferential surface of the chamber (28) and guide groove (44) formed vertically along the shuttle (20) respectively or at least one tongue (45) formed vertically along the shuttle (20) and guide groove (44) formed vertically along inner circumferential surface of the chamber (28) respectively.

14. The system as claimed in Claim 1, wherein the shuttle (20) is detachably attached via a clasping means (24) to a stopper (22) situated within the chamber (28) wherein the stopper (22) is connected to a sealing means (18) at the top end of the hollow projection (16) via a spacer (26).

15. The system as claimed in Claim 14, wherein the clasping means (24) is a magnet.

16. The system as claimed in Claim 14, wherein the clasping means (24) is a clamping device.

17. The system as claimed in claim 1, wherein the shuttle (20) is attached via a biasing means (30) to a stopper (22) situated within the chamber (28) wherein the stopper (22) is connected to a sealing means (18) at the top end of the hollow projection (16) via a spacer (26) and the biasing means (30) urges the stopper (22) into the pipe (12) to restrict the flow of material (14).

18. The system as claimed in claim 21, wherein the biasing means (30) are springs such as coil spring, flat spring and machined spring.

19. The system as claimed in Claim 1 wherein the shuttle (20) is removable from the hollow projection (16) and includes screw threads (52) formed on a top end of the shuttle (20) which screw threads (52) are interfaceable to an extendible t-wrench.

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