CLAIMS

1. A device for mining, comprising:

a first tubular member defining a first passageway therein along a first axis; and a plurality of peripheral tubular members arranged coaxially around the first tubular member, the plurality of peripheral tubular members comprising a first set of peripheral tubular members and a second set of peripheral tubular members, wherein at least one of the first set of peripheral tubular members is arranged to allow a first fluid passing therethrough to flow toward a predetermined area outside of the device in an outward direction via a lateral side of the device, and wherein at least one of the second set of peripheral tubular members is arranged to allow a second fluid passing therethrough to flow toward the first passageway.

2. The device according to claim 1, wherein the plurality of peripheral tubular members further comprise a third set of peripheral tubular members, and wherein at least one of the third set of peripheral tubular members is arranged to allow a third fluid passing therethrough toward a predetermined area outside of the device via a bottom side of the device.

3. The device according to claim 2, wherein the pressure of the third fluid is higher than the pressure of the first fluid.

4. The device according to claims 2 or 3, further comprising:

a body defining therein a plurality of compartments, wherein a first compartment of the plurality of compartments is arranged in fluid communication with the at least one of the first set of peripheral tubular members, and wherein a second compartment of the plurality of compartments is arranged in fluid communication with the at least one of the second set of peripheral tubular members, and wherein third compartment of the plurality of compartments is arranged in fluid communication with the at least one of the third set of peripheral tubular members.

5. The device according to claims 4, further comprising:

one or more first inlet pipes arranged to receive the first fluid and to supply the first fluid to the first compartment;

one or more second inlet pipes arranged to receive the second fluid and to supply the second fluid to the second compartment; and

one or more third inlet pipes arranged to receive the third fluid and to supply the third fluid to the third compartment.

6. The device according to any one of claims 2 to 4, wherein the number of the first set of peripheral tubular members is three, the number of the second set of peripheral tubular members is two, and the number of the third set of peripheral tubular members is three.

7. The device according to any one of the preceding claims, wherein the angle of discharging the second fluid to the first passageway is an acute angle in relation to a horizontal direction of the device.

8. The device according to any one of claims 2 to 7, the device further comprising:

a pump arranged to supply the first fluid to the at least one of the first set of peripheral tubular members and to supply the third fluid to the at least one of the third set of peripheral tubular members,

a compressor arranged to supply the second fluid to the at least one of the second set of peripheral tubular members.

9. The device according to claim 8, the device further comprising:

a controller arranged to control the pump and the compressor, wherein the controller controls the pump to supply the third fluid to the at least one of the third set of the peripheral tubular members at a first determined time, and after the first determined time, the controller controls the pump to discontinue supplying the third fluid to the at least one of the third set of the peripheral tubular members, controls the pump to supply the first fluid to the at least one of the first set of the peripheral tubular members, and controls the compressor to supply the second fluid to the at least one of the second set of the peripheral tubular members.

10. A system for mining, comprising:

the device according to any one of claims 1 to 9; and

a plurality of peripheral devices disposed around the device, wherein at least one of the plurality of peripheral devices comprises a second tubular member defining a second passageway therein along with a second axis and one or more peripheral members arranged around the second tubular member, and wherein each of the one or more peripheral members is arranged to allow a fourth fluid passing therethrough to flow toward the device via a lateral side of the peripheral device.

11. The system according to claim 10, wherein the second tubular member is arranged to allow a fifth fluid passing therethrough to flow toward the predetermined area outside of the second tubular member via the bottom side of the second tubular member.

12. The system according to claim 11, wherein the pressure of the fifth fluid is higher than the pressure of the fourth fluid.

13. The system according to any one of claims 10 to 12, wherein the plurality of peripheral devices are disposed equidistant around the device.

14. The system according to any one of claims 10 to 13, wherein the plurality of peripheral devices are disposed around the device spaced at a determined angle.

15. A method of using a device for mining, the method comprising:

preparing a first tubular member defining a first passageway therein along with a first axis;

preparing a plurality of peripheral tubular members arranged coaxially around the first tubular member;

supplying a first fluid to at least one of a first set of peripheral tubular members of the plurality of peripheral tubular members to discharge the first fluid passing through the corresponding one of the first set of peripheral tubular members toward

a predetermined area in an outward direction outside of the device via a lateral side of the device; and

supplying a second fluid to at least one of a second set of peripheral tubular members of the plurality of peripheral tubular members to discharge the second fluid passing through the corresponding one of the second set of peripheral tubular members toward the first passageway.

16. The method according to claim 15, the method comprising:

before supplying the first fluid and the second fluid, supplying a third fluid to at least one of a third set of peripheral tubular members of the plurality of peripheral tubular members to discharge the third fluid passing through the corresponding one of the third set of peripheral tubular members toward a predetermined area outside of the device via a bottom side of the device.

17. The method according to claim 16, wherein the pressure of the third fluid is higher than the first fluid.

18. The method according to claim 16 or 17, wherein the first fluid and the third fluid are supplied from a pump, and wherein the second fluid is supplied from a compressor.

19. A method of using a system for mining, the method comprising:

preparing a first tubular member defining a first passageway therein along with a first axis;

preparing a plurality of peripheral tubular members arranged coaxially around the first tubular member;

preparing a second tubular member defining a second passageway therein along with a second axis;

preparing one or more peripheral members arranged around the second tubular member;

supplying a first fluid to at least one of a first set of peripheral tubular members of the plurality of peripheral tubular members to discharge the first fluid passing

through the corresponding one of the first set of peripheral tubular members toward a predetermined area outside of the device in an outward direction via a lateral side of the device;

supplying a second fluid to at least one of a second set of peripheral tubular members of the plurality of peripheral tubular members to discharge the second fluid passing through the corresponding one of the second set of peripheral tubular members toward the first passageway, and

supplying a fourth fluid to at least one of the one or more peripheral members to discharge the fourth fluid passing through the corresponding one of the one or more peripheral members toward a device via a lateral side of the peripheral device, the device comprising a first tubular member defining a first passageway therein along with a first axis.

20. The method according to claim 19, the method comprising:

before supplying the fourth fluid, supplying a fifth fluid to the second passageway to discharge the fourth fluid passing through the corresponding one of the one or more peripheral members toward the device.