Claims

1. A piling apparatus for pile assembly, comprising at least one walled pipe, a clamping frame having a clamping mechanism to link to the walled pipe which has been inserted into the ground, a pressing stand linked to the clamping frame, presing cylinders having one end linked to the base of the pressing stand, another end linked to a holding clamp, wherein the holding clamp is used for clamping the material, so as to force at least one material to travel throughout the interior of the walled pipe by using the friction between the walled pipe which has been inserted into the ground with the ground served as a counterpoise, wherein components of the apparatus are constructed to press a pressing force against the material, formed by pressing cylinders applied to the materials by means of the holding clamp, and a reactive force transferred via the pressing stand, the clamping mechanism, the clamping frame to the walled pipe and balanced by the friction between the walled pipe and the ground.

2. The apparatus according to claim 1, wherein the walled pipe has been inserted into the ground by pressing or driving.

3. The apparatus according to claim 1, wherein the walled pipe has been inserted into the ground by vibrating in combination with pressing.

4. The apparatus according to claim 1, wherein the walled pipe has been inserted into the ground by rotating in combination with pressing.

5. The apparatus according to any of claims from 1 to 4, wherein the walled pipe has two open ends.

6. The apparatus according to any of claims from 1 to 4, wherein the walled pipe has one closed end.

7. The apparatus according to any of claims from 1 to 6, wherein the walled pipe has a cross-section unchanged along its length.

8. The apparatus according to any of claims from 1 to 6, wherein the walled pipe has a cross-section changed along its length.

~~9. The apparatus according to any of claims from 1 to 8, wherein the pressing~~ stand is fixed, perpendicular to the clamping frame.

10. The apparatus according to any of claims from 1 to 8, wherein the pressing stand is slidable on the clamping frame by means of pushing mechanisms so as to insert a plurality of walled pipes upon one position of the clamping frame.

11. The apparatus according to any of claims from 1 to 9, wherein the hydrolic cylinders are capable of adjusting the angle of the pressing stand, thereby pressing the materials in a desired direction.

12. The apparatus according to any of claims from 1 to 10, wherein the holding clamp clamps over the body of the material by means of a wedging mechanism driven by the hydrolic cylinders.

13. The apparatus according to any of claims from 1 to 10, wherein the holding clamp clamps over the top of the material.

14. The apparatus according to any of claims from 1 to 12, wherein the materials over which the holding clamp directly clamps are solid such as pre-cast concrete piles, shaped stainless steel piles, wooden piles.

15. The apparatus according to any of claims from 1 to 10, wherein the holding clamp clamps over an intermediate force transferring pipe so as to transfer the materials in the soft form such as plastics, fabrics or loose materials such as sand, macadam, stone into the ground.

16. The apparatus according to any of claims from 1 to 15, wherein the clamping frame is elongate and thereby the centers of the walled pipes are arranged on a straight line.

17. The apparatus according to any of claims from 1 to 15, wherein the clamping frame is not elongate and thereby the centers of the walled pipes, in the case there are not less than three walled pipes used, are not arranged in a straight line.

18. A piling apparatus for pile assembly comprising at least one walled pipe, a clamping frame having a clamping mechanism to link to the walled pipe which has been inserted into the ground, a pressing stand linked to the clamping frame, presing cylinders having one end linked to the base of pressing stand, another end linked to a rotating end clamping over the walled pipe and a holding clamp, ~~wherein the rotating end clamping over the walled pipe has a wedging~~

mechanism rotated by means of a hydrolic engine and a gear mechanism so as to produce a torque, tightly clamping over the walled pipe with a hydrolic cylinder, with the holding clamp tightly clamping over the material, so as to force at least one material to travel throughout the interior of the walled pipe by using the friction between the walled pipe which has been inserted into the ground with the ground served as a counterpoise, wherein components of the apparatus are constructed to press a pressing force against the material, formed by pressing cylinders, which can be transferred to material by means of the holding clamp, and a reactive force transferred via the pressing stand, the clamping mechanism, the clamping frame to the walled pipe and balanced by the friction between the walled pipe and the ground.

19. The apparatus according to claim 18, wherein the walled pipe has two open ends.

20. The apparatus according to claim 18, wherein the walled pipe has one closed end.

21. The apparatus according to any of claims from 18 to 20, wherein the walled pipe has a cross-section unchanged along its length.

22. The apparatus according to any of claims from 18 to 20, wherein the walled pipe has a cross-section changed along its length.

23. The apparatus according to any of claims from 18 to 22, wherein the pressing stand is fixed, perpendicular to the clamping frame.

24. The apparatus according to any of claims from 18 to 22, wherein the hydrolic cylinders are capable of adjusting the angle of the pressing stand, thereby pressing the materials in a desired direction.

25. The apparatus according to any of claims from 18 to 24, wherein the holding clamp clamps over the body of the material by means of a wedging mechanism driven by the hydrolic cylinders.

26. The apparatus according to any of claims from 18 to 24, wherein the holding clamp clamps over the top of the material.

27. The apparatus according to any of claims from 18 to 26, wherein the materials over which the holding clamp directly clamps are solid such as pre-cast concrete piles, shaped stainless steel piles, wooden piles.

28. The apparatus according to any of claims from 18 to 26, wherein the holding clamp clamps over an intermediate force transferring pipe so as to transfer the materials in the soft form such as plastics, fabrics or loose materials such as sand, macadam, stone into the ground.

29. The apparatus according to any of claims from 18 to 28, wherein pressing stand is slidable on the clamping frame by means of pushing mechanisms so as to insert a plurality of the walled pipes upon one position of the clamping frame.

30. The apparatus according to any of claims from 18 to 29, wherein the clamping frame is elongate and thereby the centers of the walled pipes are arranged on a straight line.

32. The apparatus according to any of claims from 18 to 29, wherein the clamping frame is not elongate and thereby the centers of the walled pipes, in the case there are not less than three walled pipes used, are not arranged in a straight line.

33. An installation process for pile assembly comprising the steps of:

inserting at least one walled pipe into the ground, linking the walled pipes with a clamping frame of the walled pipe in a manner that a material pressing force is transferred via the components of the apparatus to the walled pipe and balanced by the friction between the walled pipe and the ground,

inserting the materials into the interior of the walled pipe ,

pressing the materials to desired depth or calculated force,

filling up the gap between the materials and the walled pipe with loose materials.

34. The process according to 33, wherein the insertion of the walled pipe is carried out by using an independent apparatus such as driving hammer, pressing machine, vibrating hammer and use of the apparatus according to any of claims from 1 to 33 for pressing the material.

35. The process according to 33, wherein the insertion of the walled pipe is carried out by using the apparatus according to any of claims from 1 to 33, by means of the pressing rotation.

36. The process according to any of claims from 33 đến 35, wherein the friction of one walled pipe only is used to press at least one material to travel throughout said walled pipe.

37. The process according to any of claims from 33 đến 35, wherein the friction of more than one walled pipe is used to press at least one material to travel throughout at least one of those walled pipes.

38. The process according to any of claims from 33 đến 37, wherein material filling up the gap inside the walled pipe has been introduced before pressing of the material.

39. The process according to any of claims from 33 đến 37, wherein material filling up the gap inside the walled pipe has been introduced after pressing of the material.

CLAIMS

1. A piling apparatus for pile assembly, comprising:

at least one walled pipe;

a clamping frame having a clamping mechanism to link to at least one walled pipe after the at least one walled pipe has been inserted into the ground;

a pressing stand linked to the clamping frame;

pressing cylinders having one end linked to the pressing stand, and the other end linked to a holding clamp, wherein the holding clamp is used for clamping the pressing cylinders to a pile, wherein, during use, the pressing cylinders force the pile to travel through the interior of the walled pipe using the ground as a counterpoise;

wherein the pressing stand is slidable on the clamping frame by means of pushing mechanisms so as to insert a plurality of walled pipes from one position of the clamping frame;

wherein the clamping frame is not elongate and wherein, when three or more walled pipes are used, the centers of the walled pipes are not arranged in a straight line; and

wherein components of the apparatus are constructed to:

apply a pressing force against the pile using the pressing cylinders which apply a pressing force through the holding clamp;

apply a reactive force which is: transferred via the pressing stand, the clamping mechanism, the clamping frame to the walled pipe; and balanced by the friction between the walled pipe and the ground.

2. The apparatus according to claim 1, wherein the walled pipe has been inserted into the ground by pressing or driving.

3. The apparatus according to claim 1, wherein the walled pipe has been inserted into the ground by vibrating in combination with pressing.

4. The apparatus according to claim 1, wherein the walled pipe has been inserted into the ground by rotating in combination with pressing.

5. The apparatus according to claim 1, wherein the walled pipe has two open ends.

6. The apparatus according to claim 1, wherein the walled pipe has one closed end.

7. The apparatus according to claim 1, wherein the walled pipe has a cross-section unchanged along its length.

8. The apparatus according to claim 1, wherein the walled pipe has a cross-section changed along its length.

9. The apparatus according to claim 1, wherein the pressing stand is fixed, perpendicular to the clamping frame.

10. The apparatus according to claim 1, wherein the pressing cylinders are capable of adjusting the angle of the pressing stand, thereby pressing the materials in a desired direction.

11. The apparatus according to claim 1, wherein, during use, the holding clamp clamps over a pile by means of a wedging mechanism driven by the pressing cylinders.

12. The apparatus according to claim 1, wherein, during use, the holding clamp clamps over the top of a pile.

13. The apparatus according to claim 1, wherein the holding clamp clamps over an intermediate force transferring pipe so as to insert one or more piles into the ground when the piles are formed from plastics, fabrics, sand, macadam, or stone.

14. A piling apparatus for pile assembly comprising:
at least one walled pipe;

a clamping frame having a clamping mechanism to link to at least one of the walled pipes after the at least one walled pipe has been inserted into the ground

a pressing stand linked to the clamping frame;

pressing cylinders having one end linked to the pressing stand, and the other end linked to a rotating end clamp coupled to at least one of the walled pipes and a holding clamp;

wherein the rotating end clamp comprises a wedging mechanism, rotated by means of a hydraulic engine, and a gear mechanism which together produce a torque which clamps the rotating end clamp to the walled pipe;

wherein the holding clamp clamps a pile

wherein the pile travels throughout the interior of the walled pipe by using the friction between the walled pipe, which has been inserted into the ground, with the ground served as a counterpoise

wherein components of the apparatus are constructed to:

apply a pressing force against the pile using the pressing cylinders which apply a pressing force through the holding clamp, and;

apply a reactive force which is: transferred via the pressing stand, the clamping mechanism, the clamping frame to the walled pipe; and balanced by the friction between the walled pipe and the ground.

15. The piling apparatus of claim 14, wherein the pressing stand is slidable on the clamping frame by means of pushing mechanisms so as to insert a plurality of walled pipes from one position of the clamping frame.