Hydraulically Operated Jack-In Piling Device — Description of Innovation

Internationally patented silent hydraulic piling device that effectively addresses crucial environmental concerns by operating virtually free of noise pollution, dust pollution and ground vibration. Besides providing an environmental-friendly solution and increased work safety, its unique features help to contribute substantial time and cost savings, improving the overall operating efficiencies. Through this piling device, we envision in provide effective and efficient solutions in piling works and help to balance the needs of the construction industry and the public in terms of environmental issues.

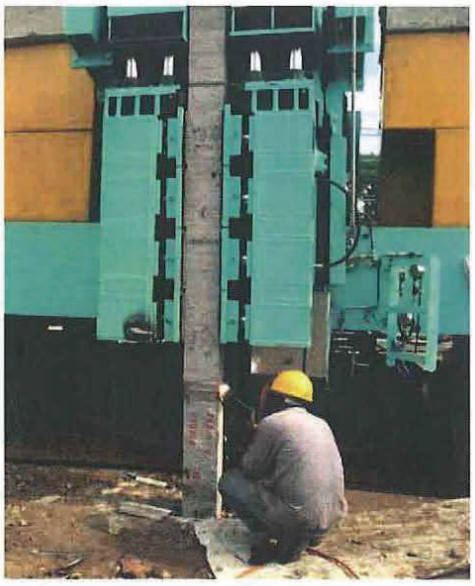
This innovative piling device includes support frames which has upper and lower portion frames. The connecting member is mounted to the outer side of the upper portion of the supporting frame by the pivotal pin. The pressing frame is for pressing the pile into the ground. The gripping frame is for gripping the pile. The centre footing is for rotating the support frame. The rotating mechanism mounted within the centre footing and support frame. The frame mounted footings and ground mounted footings mounted at the both sides of support frame for moving process in forward and reverse directions. The opposite side footing is for further stability during piling process. The hydraulic winch assembly mounted on top of the upper portion of the support frame.

The three units of 80 tons piling capacity prototypes have been built and carried out in-house trial run tested. The second unit prototype has been sold to Soon Guan piling contractor Singapore on 4th Sep 2009.
The patent jurisdiction includes:

- Singapore Patent No. 106961
- Australia Patent No. 2003256225
- US Patent No. 8,534,960

The technical engineering solutions have been developed for the piling process existing problems for foundation of the construction and building industries. The outstanding features include:

1. Hydraulic engineering jack-in pile without impact noise and ground vibration.
2. Enable to drive the pile until ultimate pile end bearing capacity proximate to boundary line of the existing building.
3. The gripping frame is connected to and suspended the beneath of the pressing frame, the pressing frame is mounted at the outer side of the upper portion of the supporting frame.
4. The attached hydraulic winch assembly is through aligned sides opening of the steel frames for the pile to the gripping position.
5. The gripping frame is able to grip the pile at the lower position for high piling effective force and stability.
6. The opposite side support footing is for further stability and less counterweights for balancing during the piling process.
7. The rotating mechanism of the centre footing is for rotating the supporting frame to any degree directions mounted with full counterweights for balancing and stability.
8. Both sides of the support frame mounted with the frame and ground footings for moving process stability in forward and reverse direction.
9. The pile location adjusting and welding for the joining piles are done at outer side of the support frame.
10. Only two workmen are required for the piling process.
11. The production range from 80 tons to 600 tons piling capacity.
12. The overall dimension of the 80 tons piling capacity are 8ft x 16ft x 11ft (W x L x H) except the winch assembly is the solution for low headroom process problems.
13. The piling rate is from 3ft per minute to 9ft per minute.
14. The moving rate is from 1.5ft per minute to 4ft per minute.



Picture 1: Welding for the joining piles

Picture 2: Lifting pile to the gripping position

Figure 1

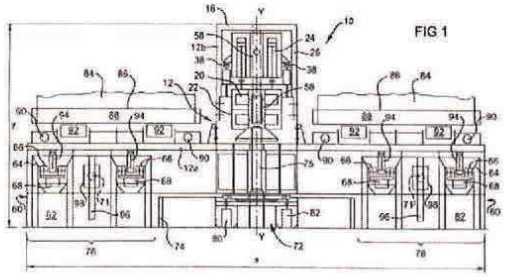


Figure 2

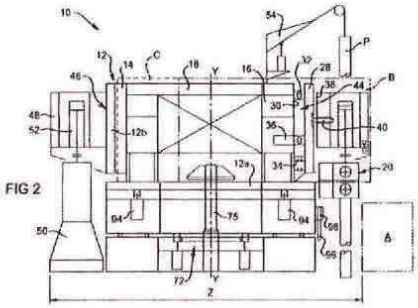
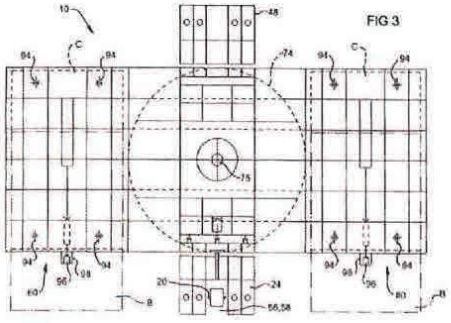


Figure 3



Drawings Description:

Figure 1 indicates the centre footing support frame and ground mounted footings for moving forward and reverse directions.

Figure 2 indicates the winch assembly through the aligned opening side of the steel frames for the pile in gripping position. The opposite side footing is for further stability.

Figure 3 indicates the rotation mechanism mounted within between the centre footing and support footing for direction rotating.