CLAIMS

1. An apparatus for generating electrical power, comprising:

a generator for generating electrical power;

a handle having a first end rotatably coupled to the generator, and a second end rotatable 360° about the first end in a substantially vertical plane from a top dead centre (TDC) position, through a bottom dead centre (BDC) position, and back to top dead centre (TDC) position;

a first weight that is moveable along the handle by a first linear actuator, during rotation of the handle, between a first position, in which the first weight is proximal to the first end of the handle, and a second position, in which the first weight is proximal to the second end of the handle;

a swing arm coupled to the handle and operable to rotate the handle from BDC towards TDC when the first weight is in the first position on the handle, the swing arm being configured to tilt between a first position when the handle is at BDC, and a second position when the handle is at TDC; and

a second weight that is moveable by a second linear actuator to assist the tilt of the swing arm between its first and second positions;

wherein the first linear actuator is arranged to move the first weight along the handle between the first and second positions as the handle is rotated such that the first weight can provide a mechanical advantage during rotation of the handle from TDC to BDC due to gravity acting on it, whereby rotation of the handle drives the generator thereby to generate electrical power.

2. The apparatus of claim 1, wherein the first linear actuator is arranged to move the first weight from its first position to its second position so that the first weight is in its second position when the handle is at TDC, and from its second position to its first position so that the first weight is in its first position when the handle is at BDC.

3. The apparatus of claim 1 or 2, wherein the first linear actuator is arranged such that movement of the first weight between its first and second positions begins before the handle reaches TDC and/or BDC.

4. The apparatus of claim 3, wherein movement of the first weight begins at least 1° before the handle reaches TDC and/or BDC, preferably when the handle is in a position

between 1° and 45°, more preferably between 1° and 30°, and even more preferably when the handle is in a position between 1° and 15° before it reaches TDC and/or BDC.

5. The apparatus of claim 3 or 4, wherein movement of the first weight between its first and second positions begins approximately 10° before the handle reaches TDC and/or BDC.

6. The apparatus, of any preceding claim, wherein the handle comprises an elongate rigid member.

7. The apparatus of any preceding claim, wherein the apparatus comprises a plurality of handles, each handle rotatably coupled to the generator.

8. The apparatus of any preceding claim, wherein the first linear actuator is configured such that the movement of the first weight between its first and second positions completes when the handle reaches TDC and/or BDC.

9. The apparatus of any preceding claim, wherein the swing arm is pivotally mounted to the apparatus, having a first end coupled to the handle and a second end coupled to a pulley system configured to cause the swing arm to pivot about its mount whereby to rotate the handle.

10. The apparatus of any preceding claim, wherein the swing arm is coupled to the handle via an elongate strut that engages with an elongate slot in the handle, the slot being located between the first end and second end of the handle, wherein, when engaged with an end of the elongate slot that is located towards the second end of the handle, the elongate strut acts to rotate the handle from BDC to TDC.

11. The apparatus of any preceding claim, wherein the second weight is provided on a tiltable platform, said platform having a first end located towards the first end of the swing arm, and a second end located towards the second end of the swing arm, the platform being pivotally mounted to the apparatus at a pivot point positioned between the first end and second end of the platform, wherein said second weight is moveable along the platform between the first end and second end of the platform, wherein movement of the second weight past the pivot point causes the platform to tilt downward in the direction of said movement, said platform

being coupled to the swing arm such that tilting movement of the platform assists tilting movement of the swing arm.

12. The apparatus of any preceding claim, wherein the first linear actuator is a piston, preferably a hydraulically driven piston.

13. The apparatus of any preceding claim, wherein the second linear actuator is a piston, preferably a hydraulically driven piston.

14. The apparatus of any preceding claim, wherein the handle is coupled to the generator via a gearbox.

15. The apparatus of any of claims 1 to 13, wherein the generator comprises a ring generator.

16. A method of ~~operating~~ generating electrical power using an apparatus according to any of claims 1 to 15, the method comprising:

during rotation of the handle from the top dead centre (TDC) position to the bottom dead centre (BDC) position, actuating the first linear actuator to move the first weight along the handle from its second position, in which the first weight is proximal to the second end of the handle to its first position, in which the first weight is proximal to the first end of the handle, so that the first weight is at its first position when the handle is at approximately BDC, and actuating the second linear actuator to move the second weight to assist motion of the swing arm from its second position to its first position; and

during rotation of the handle from the BDC position to the TDC position, actuating the first linear actuator to move the first weight along the handle from its first position to its second position, so that the first weight is at its second position when the handle is at approximately TDC, and actuating the second linear actuator to move the second weight to assist motion of the swing arm from its first position to its second position,

wherein, when in its second position, the first weight provides a mechanical advantage as the handle rotates from TDC to BDC due to gravity acting on it, whereby rotation of the handle drives the generator thereby to generate electrical power.

17. A power station comprising an apparatus according to any of claims 1 to 15 and/or implementing a method according to claim 16.