

CLAIMS

What is claimed is:

1. An apparatus for converting organic waste fuel into usable energy comprising:

a organic waste fuel loading area for loading organic waste fuel onto a moving grate that moves the organic waste fuel product through the apparatus from the organic waste fuel loading area to an unloading area;

a level control device for controlling the amount of organic waste fuel that moves from the loading area to the moving grate;

a perforated stationary plate located beneath the moving grate with the organic waste fuel thereon that allows air to pass through perforations to the organic waste fuel on the moving grate;

at least one controlled combustion air zone that directs air with a substantially controlled temperature through the stationary plate to the organic waste fuel on the moving grate;

at least one nozzle that directs air above the organic waste fuel on the moving grate; and

an ignition source that reacts with the organic waste fuel on the moving grate and the air to combust the organic waste fuel and create at least one organic waste fuel-byproduct.

2. The apparatus of claim 1 further comprising a organic waste fuel-byproduct loading area for loading organic waste fuel-byproduct onto the moving grate between the organic waste fuel on the moving grate and the moving grate.

3. The apparatus of claim 2 wherein the organic waste fuel-byproduct between the organic waste fuel on the moving grate and the moving grate is ash.

4. The apparatus of claim 2 wherein the organic waste fuel-byproduct between the organic waste fuel on the moving grate and the moving grate is about 1-2 inches thick.

5. The apparatus of claim 1 further comprising an opening that directs a combustion retarding gas to a location within the apparatus near the organic waste fuel loading area and the moving grate.

6. The apparatus of claim 5 wherein the combustion retarding gas is one of the at least one organic waste fuel-byproduct.

7. The apparatus of claim 5 further comprising a second opening that directs the combustion retarding gas through the perforated stationary plate and the moving grate into the organic waste fuel on the moving grate.

8. The apparatus of claim 1 further comprising an opening that directs emission reducing agents to a location within the apparatus near the organic waste fuel loading area and the moving grate.

9. The apparatus of claim 1 further comprising a force draft fan that supplies the air to the at least one controlled combustion air zone.

10. The apparatus of claim 9 wherein the amount of air supplied to the at least one controlled combustion air zone is determined based on a physical or chemical properties of the organic waste fuel.

11. The apparatus of claim 1 wherein the perforations in the perforated stationary plate can be closed or open and thus restrict or promote air that passes to the organic waste fuel on the moving grate.

12. The apparatus of claim 1 further comprising an ignition arch that radiates heat given off by the combusting organic waste fuel back into the combusting organic waste fuel.

13. The apparatus of claim 12 wherein at least one of the organic waste fuel-byproducts is ammonia gas; and

wherein the ignition arch is at an angle that directs the ammonia gas into a throat of the combustion chamber.

14. The apparatus of claim 1 further comprising a throat that collects and mixes ammonia gas that is at least one of the organic waste fuel-byproducts with other gases that are at least one of the organic waste fuel-byproducts.

15. The apparatus of claim 14 wherein the throat has a corrugated shape.

16. The apparatus of claim 15 wherein the corrugated shape of the throat creates ignition points that combust organic waste fuel-byproducts in the throat.

17. The apparatus of claim 1 wherein the moving grate allows air to pass through.

18. The apparatus of claim 1 wherein the level control device is an adjustable gate that is adjustable in a direction perpendicular to a direction that the moving grate moves.

19. The apparatus of claim 18 wherein a protective insulating panel protects the adjustable gate from heat-related damage.

20. The apparatus of claim 1 wherein the moving grate is mounted on a roller assembly that drives the moving grate.

21. The apparatus of claim 1 wherein one of the at least one organic waste fuel by-products is an ash suitable for use as a fertilizer.

22. The apparatus of claim 1 wherein one of the at least one organic waste fuel by-products is an ash suitable for use as a feed additive.

23. The apparatus of claim 1 wherein one of the at least one organic waste fuel by-products is an ash suitable for use as a mineral supplement

24. The apparatus of claim 1 further comprising a variable speed force draft fan that supplies air to the at least one controlled combustion air zone.

25. The apparatus of claim 1 further comprising a variable speed force draft fan that supplies air to the at least one nozzle.

26. The apparatus of claim 1 further comprising combustion-enhancing agent that is added to the organic waste fuel to increase the combustion of the organic waste fuel.

27. The apparatus of claim 1 further comprising combustion-reducing agent that is added to the organic waste fuel to decrease the combustion of the organic waste fuel.

28. The apparatus of claim 1 further comprising a burnout arch that intensifies combustion of the organic waste fuel on the moving grate.

29. The apparatus of claim 1 further comprising a pilot burner that ignites flammable organic waste fuel-byproducts before the organic waste fuel-byproducts exit the apparatus.