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GARBAGE INCINERATOR

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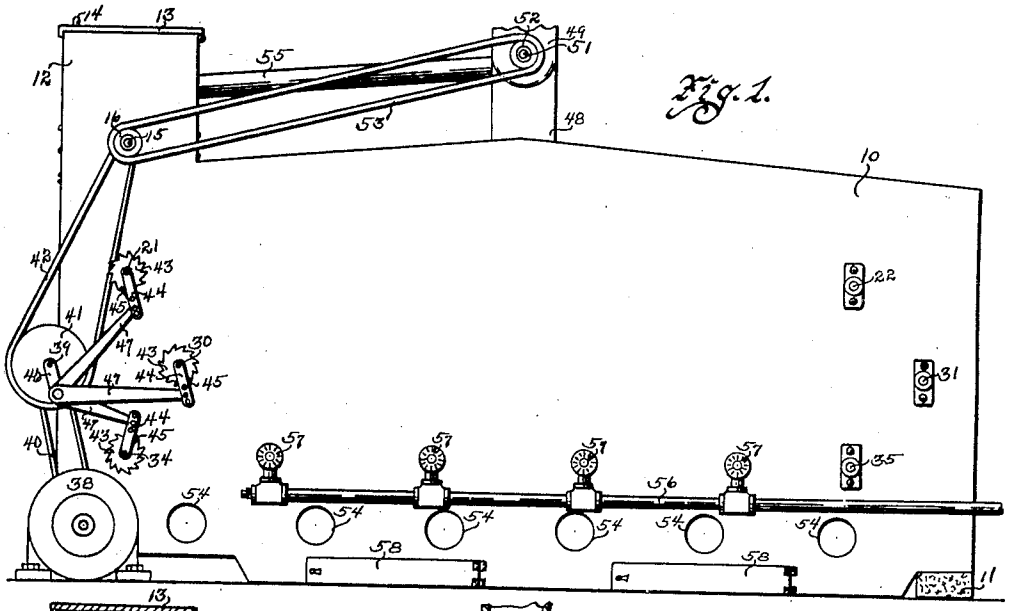


Fig. 1.

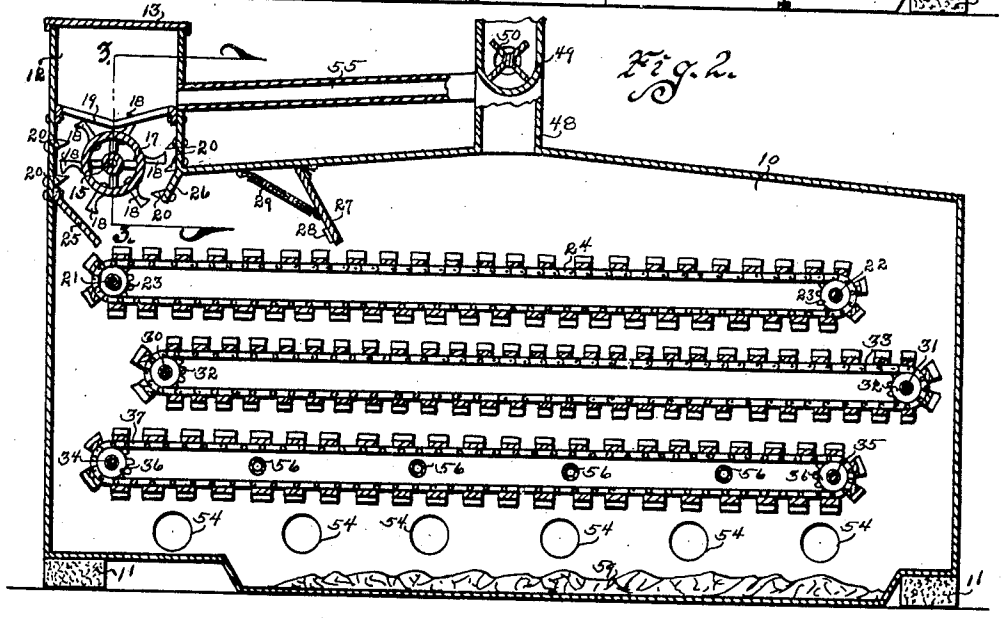


Fig. 2.

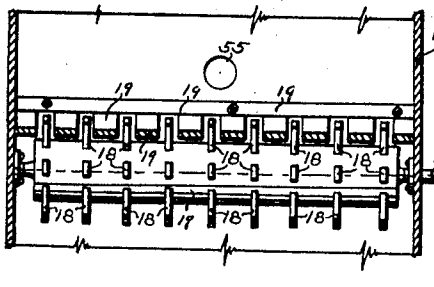


Fig. 3.

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UNITED STATES PATENT OFFICE

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GARBAGE INCINERATOR

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The principal object of our invention is to provide a device for disposing of waste matter such as garbage and the like by dehydration and combustion.

A further object of this invention is to provide a garbage incinerator that tears up or otherwise disintegrates the garbage uniformly and in a given length of time regardless of the amount of waste material placed in the hopper.

A still further object of our invention is to provide a garbage incinerator that is so constructed that it is impossible to choke or slow down the tearing or chopping cylinder when an excessive amount of garbage to be burned is placed in the receiving hopper.

A still further object of our invention is to provide an incinerator that spreads the garbage to be incinerated evenly in thickness over the drying grate regardless of the amount of garbage placed on the same from the hopper.

A still further object of our invention is to provide a garbage incinerator having a top that is so constructed as to guide the smoke from the incinerating of the garbage into the smoke pipe.

A still further object of our invention is to provide a garbage incinerator that when the lid on the hopper is raised to insert waste material into the same no smoke from the incinerating of the material inside the incinerator will escape out through the hopper.

These and other objects will be apparent to those skilled in the art.

Our invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in our claims and illustrated in the accompanying drawings, in which:

Fig. 1 is a side view of our incinerator ready for use.

Fig. 2 is a side sectional view of the same incinerator and more fully illustrates its interior construction and arrangement.

Fig. 3 is an end sectional view of the chopping and tearing mechanism and is taken on line 3—3 of Fig. 2.

To incinerate garbage is very costly due to the fact that in the garbage incinerators now on the market the waste material is subjected to fire in its original wet condition. It is well known that garbage consists of about one third wet paper, one third vegetable offal, such as leaves, peelings, trimmings and decayed matter, and the balance is composed of meat scraps, bones, package paper and the like. Therefore approximately seventy percent of the ordinary garbage is combustible material and if properly distributed is almost sufficient to dry and incinerate the whole mass. This we have attempted to accomplish by first cutting the garbage into small particles and distributing the same evenly and uniformly over the drying endles grate in order that the garbage will be dried of all volatile matter by the heat from the burning solid matter on the lower incinerating endless grate.

As an aid to this and for starting and more quickly incinerating the garbage we use a small oil burner adjacent the lower grate.

We have used the numeral 10 to designate the incinerating housing made of sheet metal or the like designed to rest on the floor or other suitable support such as cement blocks 11. The numeral 12 designates the hopper of the device having the hinged lid 13. The manually opening of this lid is facilitated by the handle member 14. Rotatably mounted in this hopper is the shaft 15 having the pulley wheel 16. Inside the hopper, and secured on the shaft 15 against relative movement thereto is the cylinder member 17. Detachably secured on the periphery of the cylinder 17 are a plurality of rows of cutting and tearing teeth 18 having their forward side curved or hooked, as shown in Fig. 2. Secured by suitable means in the hopper 12, and so arranged above the cylinder 17 that the teeth 18, when the cylinder 17 is rotated, will pass above the upper surface of the same, as shown in Fig. 2 and Fig. 3, is the retarding grate 19. This retarding grate has its center portion at a much less height than the height of its end portions, thereby causing the gar-

bage placed in the hopper to move by force of gravity to a point near the center of the retarding grate. By this arrangement, when the cylinder 17 is rotated the teeth 18 will pass up above the upper surface of a portion of the retarding grate and will obtain only a certain amount of the carbage above the grate, thereby making it impossible to choke or clog the tearing and cutting mechanism of the device by placing an excessive amount of carbage at one time in the hopper 12.

The successful cutting and cleaning of the teeth 18 is aided by the detachable lugs 20 secured on the inner surface of the hopper and extending between the teeth 18 to a point adjacent the cylinder 17.

When the teeth 18 or the lugs 20 become worn it is merely necessary to remove the same and replace with new ones.

Rotatably mounted in the forward end of the housing 10 is the shaft 21. On the same plane as the shaft 21, and rotatably mounted in the rear end of the housing 10, is the shaft 22. Permanently secured on each of the shafts 21 and 22 and inside the housing 10 are sprocket wheels 23 around which is the endless chain grate 24. This chain grate comprises the ordinary two parallel chains having a plurality of slats secured to and extending from one to the other in the usual manner. The slats in this chain grate may be bent upwardly at each end, as shown in Fig. 2, to prevent the garbage from falling over the side of the same. It is upon this endless chain grate that the garbage is guided by the baffle member 25 from the hopper 12 and upon which it is designed to be dried before being incinerated. In order to prevent the garbage thrown from the teeth 18 to a point on this chain grate not near the forward end thereof we have provided the second baffle member 26. Hinged to the top of the housing 10 at its upper marginal edge is the elongated spreader member 27 having its lower marginal edge terminating a slight distance above the drying endless chain grate 24.

The stop 28 is designed to limit the swinging movement of this spreader member to one direction and the spring 29 yieldingly holds the member 27 in engagement with the stop 28. By this construction if the teeth 18 deposit the garbage to be incinerated on the endless chain grate in a bunch, the same will be yieldingly retained by the spreader or leveling member 27, thereby leveling and spreading the waste matter evenly and uniformly over the endless chain grate. If a comparatively large object is encountered on the grate 24 the spreader member 27 will swing to a position to allow it to pass and after it has passed the coil spring 29 will return it to a normal position against the stop 28.

The numeral 30 designates a shaft rotatably mounted in the housing 10 near its front end. The numeral 31 designates a second shaft rotatably mounted in the housing 10 near its rear end and in the same plane with the shaft 30. Permanently secured on each of the shafts 30 and 31 are sprocket wheels 32 around and engaging which is the center endless chain grate 33 of the same construction as the endless chain grate 24. It will here be noted that the rear end of the endless chain grate 33 extends to the rear and below the endless chain crate 24, thereby permitting the semi-dried garbage on the endless chain grate 24 to fall from the same and on to the endless chain grate 33. The numeral 34 designates a shaft rotatably mounted in the forward end of the housing 10. The numeral 35 designates a second shaft in the same plane as the shaft 34 and rotatably mounted in the rear end of the housing 10. Secured on each of the shafts 34 and 35 are the sprocket wheels 36 around which is the endless chain grade 37 upon which the garbage is designed to be incinerated. In order that the garbage may fall from the endless chain grate 33 to the endless chain grate 37 the forward end of the chain grate 37 extends beyond the forward end of the chain grate 33, as shown in Fig. 2.

We have designated the electric motor for operating the device by the numeral 38. Rotatably mounted on the outside of the housing 10 is the shaft 39 in operative engagement with the motor 38 by the endless belt 40. Permanently secured on the shaft 39 is the large pulley wheel 40 in operative engagement with the pulley wheel 16 by the endless belt 42. On each of the shafts 21, 30 and 34 is a wheel 43 having one-way notches on its periphery, as shown in Fig. 2. It will be noted that the teeth of the wheel 43 on the shaft 30 extends in the opposite direction from the direction of the teeth on the other two wheels 43, in order that the middle endless conveyor will be rotated in the opposite direction from the direction that the endless grates 24 and 37 are rotated.

Embracing each of these wheels 43 and rotatably mounted on the shaft to which the wheel is secured, respectively, is the arm 44. Secured to each arm 44, and engaging the teeth on the wheel 43 adjacent to it, is a ratchet member 45. Secured to the shaft 39 is a crank arm 46. Leading from this crank arm to the three arms 44 are the three links 47 respectively. By this construction, when the motor 38 is running the endless chain conveyors will be slowly rotated. Communicating with the smoke pipe 48 is the centrifugal fan housing 49, rotatably mounted in which is the centrifugal fan 50 having the shaft 51. Secured on the shaft 51 is the pulley wheel 52. Operatively connecting the pulley wheel 16 with the pulley wheel 52 is the endless belt 53, thereby rotating the centrifugal fan 50 when the motor 38 is run-

ning. By this arrangement fresh air will be induced into the housing 10 through the air ports 54 and all of the smoke and odor inside the housing 10 will be sucked up and through the smoke pipe 48.

To take care of any smoke or odor that might be in the hopper 12, we have provided the pipe 55 having one end communicating with the inside of the hopper 12 and its other end communicating with the inside of the smoke pipe 48. To cause the smoke and odor to naturally pass into the smoke pipe 48 and to prevent any dead air space, we have sloped the top of the housing 10 upwardly from both ends where it eventually terminates adjacent the smoke pipe 48. The numeral 56 designates an oil burner extending into the housing 10 and between the upper and lower portions of the endless chain grate 37 for aiding in the incinerating of the garbage in that grate.

This oil burner is designed to lead to a supply tank, not shown, and is manually operated by the hand control valves 57. We have used the numeral 58 to designate doors in the side of the housing 10 for the removal of the garbage ash 59.

After the device has been operated for a few minutes the oil burner may be turned on low flame and little if any fuel oil will be necessary as the garbage will almost burn itself. If it is desired the complete device may be made portable by mounting it on suitable wheels.

Some changes may be made in the construction and arrangement of our improved garbage incinerator without departing from the real spirit and purpose of our invention and it is our intention to cover by our claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

We claim:

1. In a device of the class described, an incinerating housing having a top terminating at a point above its ends, a smoke pipe communicating with the inside of said housing at a point near its top center, a plurality of endless chain grates rotatably mounted in said housing designed to receive garbage for drying and incinerating, oil burners in said housing adjacent one of said grates, a hopper for delivering garbage to the inside of said incinerating housing, a lid on said hopper, a cylinder rotatably mounted in said hopper, teeth on said cylinder for chopping up said garbage, a fan in said smoke pipe for drawing air and smoke from said incinerating housing, a pipe having one end communicating with said hopper and its other end communicating with said smoke pipe and a prime mover for rotating said grates, cylinder and fan.

2. In a device of the class described, an incinerating housing, having a top terminating at a point above its two ends, a smoke pipe communicating with the inside of said housing at said terminating point, an endless chain grate rotatably mounted in said housing, a garbage leveling means in said housing for spreading the garbage evenly over said grate, an oil burner in said housing, a hopper for delivering garbage to the inside of said housing, a lid on said hopper, a means in said hopper for chopping up said garbage, a fan in said smoke pipe for drawing gas and smoke from said incinerating housing, a pipe having one end communicating with said hopper and its other end communicating with said smoke pipe at a point below said fan, and a prime mover for rotating said grate, chopping means and fan.

3. In a device of the class described, an incinerating housing, a hopper communicating with the inside of said housing, a smoke pipe leading from said housing, a fan in said smoke pipe for drawing gases through the same, a lid on said hopper, a pipe leading from the inside of said hopper to said smoke pipe for clearing the inside of the said hopper of undesirable gases and smoke when said lid is raised to place garbage in said hopper, a plurality of endless chain grates in said housing and upon which the garbage is to be dried and incinerated, a means for controlling the speed the said grates travel, a yieldable leveling board above the top endless grate, and a prime mover for rotating said chain grates.

4. In a device of the class described, an incinerating housing having a top terminating at a point above its ends, a smoke pipe communicating with the inside of said housing at a point near its top center, a plurality of endless chain grates rotatably mounted in said housing one above the other and designed to receive garbage for drying and incinerating, oil burners in said housing adjacent the lowest chain grate, a hopper for delivering garbage to the upper chain grate, mechanism in said hopper for chopping up said garbage, a fan in said smoke pipe for drawing air and smoke from said incinerating housing, a pipe having one end communicating with said hopper and its other end communicating with the said smoke pipe, and a prime mover for rotating said grates, said chopping mechanism and said fan.

5. In a device of the class described, an incinerating housing, a smoke pipe communicating with the inside of said housing, a plurality of endless chain grates rotatably mounted in said housing one above the other and designed to receive garbage for drying and incinerating, an oil burner in said housing adjacent the lower of said chain grates, a hopper for delivering garbage to the inside of said incinerating housing and onto the upper endless grate, a cylinder rotatably mounted in said hopper, teeth on said cylin-

der for chopping up said garbage, a fan in said smoke pipe for drawing air and smoke from said incinerating housing, a pipe having one end communicating with said hopper and its other end communicating with said smoke pipe, and a prime mover for rotating said grates, cylinder and fan.

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